



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

### Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

### About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



2nd. Per. 80

Per. 18949 d. 112







THE  
ENTOMOLOGIST'S  
MONTHLY MAGAZINE:

CONDUCTED BY

J. W. DOUGLAS.

E. C. RYE, F.Z.S.

R. McLACHLAN, F.L.S.

H. T. STANTON, F.R.S.

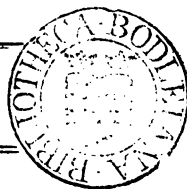
---

---

VOL. XIII.

---

---



*"Very close and diligent looking at living creatures, even through the best microscope, will leave room for new and contradictory discoveries."*

"GEORGE ELIOT."

---

LONDON:

JOHN VAN VOORST, 1, PATERNOSTER ROW.

1876-7.

B 507 1

---

LONDON :

NAPIER, PRINTER, SEYMOUR STREET, EUSTON SQUARE, N.W.

MDCCCLXXVII.

---

## P R E F A C E.

---

We take advantage of the conclusion of the Thirteenth Volume of this Magazine to address a few words to our readers.

From time to time we have heard it said, that there is in it sometimes a deficiency of communications interesting to specially British entomologists. The want, if such is found by some to exist, does not rest with us, for articles of this class have never been declined, provided they were of more than personal interest; and notes referring particularly to British entomology not only have had, but will have, special favour, and are particularly desired. The geographical and insular situation, as well as the climatic condition, of Britain, render all notices of its insect-products not only of local but of general zoological importance, because it is from the accumulation of such records that materials for general scientific deductions can be obtained; but it has always been our aim to make the Magazine something more than a register of transitory information. In both respects, we have reason to know the result is appreciated, both at home and abroad.

With regard to the financial position we have reason to be content. The large amount of small type used in each number, while it costs more than the large, enables us to give a greater amount of matter. There has never been any intention or desire to make the Magazine a means of pecuniary gain, and if a larger number of subscribers increase the fund for expenditure, it will be used for their general benefit by giving more illustrations or matter.

1, *Paternoster Row* :

*May, 1877.*





	PAGE
British Tortrices, Notes on ... ..	158
Brown, Death of Edwin ... ..	116
„ 's Collections, The Sale of the late Mr. Edwin ..	257
Bruchus pisi, Note on ... ..	181
Buprestidæ, Descriptions of nine new species of ... ..	155
„ „ „ some „ „ „ belonging to the genus <i>Lius</i>	48
Butterflies, Early hibernation of... ..	94
„ from the Philippine Islands, Descriptions of two new ... ..	178
„ now known to inhabit New Zealand, List of ... ..	152
„ The, of North America;” by W. H. Edwards: Review ...	168
Capture of a black variety of <i>Orthosia suspecta</i> ... ..	109
„ „ <i>Aphalara nervosa</i> ... ..	66
„ „ <i>Catocala fraxini</i> ... ..	108
„ „ <i>Cidaria reticulata</i> ... ..	109
„ „ <i>Deiopeia pulchella</i> ... ..	138
„ „ <i>Leucania vitellina</i> in the New Forest ... ..	64
„ „ <i>Pieris Daplidice</i> near Southend, Essex ... ..	108
„ „ <i>Tillus unifasciatus</i> and <i>Xylotrogus brunneus</i> near London	65
Captures at ivy-bloom ... ..	162
„ „ sugar in North Wales in October ... ..	211
„ of Hemiptera, Recent ... ..	112
„ „ Lepidoptera in East Sussex ... ..	87
„ „ rare Coleoptera, Hemiptera and Hymenoptera at Chobham; including an <i>Odynerus</i> new to Britain ... ..	113
„ „ „ <i>Noctus</i> in the Isle of Wight ... ..	139
<i>Cardiophorus rufipes</i> , Occurrence in Britain of ... ..	227
<i>Catocala fraxini</i> , Capture of ... ..	108
„ <i>promissa</i> , Natural History of .. ...	233
<i>Catoptria aspidiscana</i> and <i>Elachista subnigrella</i> , Early appearance of ...	16
Change of generic name ( <i>Parthenos</i> , Hübn.) ... ..	216
<i>Chermes rhamni</i> , Note on <i>Trioza Walkeri</i> and ... ..	255
<i>Chœrocampa nerii</i> at Hemel Hempstead, Occurrence of ... ..	138
<i>Cidaria reticulata</i> , Capture of ... ..	109
„ „ „ Notes on ... ..	142
Cleridæ, Descriptions of new Cucujidæ and ... ..	118
Coleoptera at Aviemore, Inverness-shire, in July, 1876 ... ..	111
„ in the Isle of Man ... ..	65
Collections of British Lepidoptera ... ..	279
Colony of American White-ants at Vienna ... ..	17
Colorado Beetle, The ... ..	181, 253
<i>Coremia propugnata</i> , Description of the larva of ... ..	213
<i>Corixa vernicosa</i> and <i>C. Douglasi</i> , Note on ... ..	137
<i>Crambus tristellus</i> , Natural history of ... ..	14
<i>Cryptoblabes bistriga</i> , Description of the larva of ... ..	111
Cucujidæ and Cleridæ, Descriptions of new .. ...	118
<i>Cymatophora flavicornis</i> and <i>Dianthœcia cœsia</i> , Eggs of ... ..	210
„ <i>ocularis</i> , Natural history of ... ..	90
Cynipidæ, Notes on British Tenthredinidæ and ... ..	173, 196

	iii. PAGE
Danais Archippus—a foreign visitor ... ..	107
Deiopeia pulchella at Bournemouth ... ..	139
"    "    " Brighton ... ..	163
"    "    " Neath .. ..	163
"    "    " Torquay ... ..	163
"    "    " Capture of .. ..	138
Depressaria costosa, Haw., On a form of ... ..	281
Description of a new genus of Anisotomidæ ... ..	78
"    "    " Harma from W. Africa ... ..	277
"    "    " species of Argynnis from Arctic America ... ..	206
"    "    "    " Ectemnorhinus from Kerguelen Land ... ..	51
"    "    "    " European Hemiptera-Heteroptera ... ..	104
"    "    " Eupithecia albipunctata, var. angelicata ... ..	278
"    "    " the larva and habits of Lobophora viretata ... ..	185
"    "    " &c., of Anarta cordigera ... ..	12
"    "    "    " melanopa ... ..	11
"    "    "    " Miana fasciuncula ... ..	63
"    "    " of Acidalia emarginata ... ..	13
"    "    "    " Axylia putris ... ..	248
"    "    "    " Coremia propugnata ... ..	213
"    "    "    " Cryptoblabes bistriga ... ..	111
"    "    "    " Epunda lutulenta ... ..	163, 184
"    "    "    " Herminea grisealis ... ..	110
"    "    "    " Lobophora hexapterata ... ..	249
"    "    "    " Nola albulalis ... ..	63
"    "    "    " Pterophorus lithodactylus ... ..	236
"    "    " larvæ and habits of Ebulea stachydalis and sambucalis ..	133
"    "    " pupa of Nola albulalis ... ..	94
"    "    " three new species of Papilio from the collection of Mr. Herbert Druce ... ..	56
Descriptions of hitherto uncharacterized Phytophaga ... ..	6, 126
"    " Hymenoptera from Spitzbergen, collected by the Rev. A. E. Eaton ... ..	241
"    " new Cucujidæ and Cleridæ ... ..	118
"    "    " genera and species of Galerucidæ ... ..	224
"    "    " Hemiptera-Heteroptera ... ..	102
"    "    " nine new species of Buprestidæ ... ..	155
"    "    " some new genera and species of New Zealand Coleoptera ... ..	20, 70, 97, 190, 265
"    "    " species of Buprestidæ, belonging to the genus Lius ... ..	48
"    "    " three " " European Hemiptera-Homoptera ... ..	83
"    "    "    " Hemiptera-Heteroptera from New Zealand ... ..	105
"    "    " two Butterflies from the Philippine Islands ... ..	178
Development, indoors, of hibernating pupæ of Lepidoptera, Observations on the ... ..	16
Diagnoses of certain species of Psyllidæ, which may be expected to occur in Britain ... ..	66
"    " four species of Doryphora from Columbia ... ..	273
"    " undescribed species of Phytophaga ... ..	79



	PAGE
Diagnosis of a new species of <i>Psallus</i> ... ..	154
<i>Dianthœcia cœsia</i> double-brooded? Is ... ..	163
"    "    , Eggs of <i>Cymatophora flavicornis</i> and ... ..	210
"    "    , Notes on, and other <i>Lepidoptera</i> in the Isle of Man ...	143
<i>Diasemia literalis</i> ... ..	93
"    "    in South Wales ... ..	36
<i>Dichrooseyctus rufipennis</i> , Occurrence of ... ..	65
"Die Neuropteren Europas;" by F. Brauer: Review ... ..	44
<i>Doryphora</i> from Columbia, Diagnoses of four species of ... ..	273
( <i>Doryphora decemlineata</i> ) The Colorado Beetle ... ..	181, 253
Doubleday collection, The ... ..	18, 167
Dragon-flies, On preserving ... ..	88
Dublin Society, Entomological collections of the ..	283
<i>Ebulea stachydalis</i> and <i>sambucalis</i> , Description of the larvæ and habits of ..	133
"    "    , Another British example of ... ..	64
"    "    , Note on ... ..	93
Economy of <i>Lacommetopus clavicornis</i> , The ... ..	236
<i>Ectemnorrhinus</i> from Kerguelen Land, Description of a new species of ...	51
Eggs of <i>Cymatophora flavicornis</i> and <i>Dianthœcia cœsia</i> ... ..	210
<i>Elachista subnigrella</i> , Early appearance of <i>Catoptria aspidiscana</i> and ...	16
Entomological Society of London, Proceedings of the 19, 46, 68, 95, 117, 144, 168, 189, 239, 264, 284	
<i>Epunda lutulenta</i> , Description of the larva of ..	163, 184
"    "    var. <i>luneburgensis</i> , Occurrence of, in Scotland ...	141, 164
<i>Eupithecia albipunctata</i> , var. <i>angelicata</i> , Description of ... ..	278
" <i>minutata</i> and its variety <i>knautiata</i> ... ..	185
" <i>subciliata</i> in Yorkshire ... ..	108
Food-plant of <i>Agrotis agathina</i> ..	11
"    " <i>Pachnobia hyperborea</i> ( <i>alpina</i> ), Larva and ... ..	164, 183
Foreign visitor, A ( <i>Danaïa Archippus</i> ) ... ..	107
<i>Galerucidæ</i> , Descriptions of new genera and species of ... ..	224
Galls of <i>Nematus gallicola</i> occurring over water ..	166
<i>Gelechia</i> ( <i>Doryphora</i> ) <i>morosa</i> in England, Occurrence of ..	144
" <i>humeralis</i> not uncommon in Perthshire ... ..	38
" <i>lutulentella</i> at Cheshunt ... ..	187
Habitat of <i>Velleius dilatatus</i> , A new ... ..	136
Habits of <i>Myrmedonia collaris</i> ... ..	64
Harma from W. Africa, Description of a new ... ..	277
<i>Heliothis scutosa</i> in Norfolk ... ..	280
<i>Helophorus</i> new to Britain, Four species of ... ..	39
"    "    , Note on an unrecorded British species of ... ..	40
Hemiptera, Abnormal structure of the antennæ of ... ..	188
"    at Aviemore ... ..	112
"    Recent captures of ... ..	112
"    -Heteroptera, British—Additional species ..	85
"    "    , Description of a new species of European ...	104
"    "    , Descriptions of new ..	102
"    "    from New Zealand, Description of three new species of	105

	v.
	PAGE
Hemiptera-Heteroptera, Morayshire Noctua and ... ..	166
„ -Homoptera, Descriptions of three new species of European ...	83
„ „ „ On certain British ... ..	130
Hepialus humuli, Note on the pendulum action in flight of ♂ ... ..	63
Herminea grisealis, Description of the larva of ... ..	110
Hibernaculum, A strange ... ..	16
Hibernating pupæ of Lepidoptera, Observations on the development, indoors, of	16
Hibernation of butterflies, Early ... ..	94
Homoptera flying in December ... ..	189
„ „ „ Scarcity of autumnal ... ..	166
House-ant at Stockport, The ... ..	254
Hymenoptera from Spitzbergen, collected by the Rev. A. E. Eaton, De- scriptions of ... ..	241
Insect-notes from the Sandwich Isles ... ..	227
Insects of the American (“Polaris”) Arctic expedition, The ... ..	228
„ „ „ Arctic Expedition, The .. ..	181
Ivy-bloom, Captures at ... ..	162
Japanese Butterflies, List of ... ..	33
Kerguelen Land, Description of a new species of Ectemnorhinus from ...	51
Lacomotopus clavicornis, The economy of ... ..	236, 283
Larva and habits of Lobophora viretata, Description of the ... ..	185
„ „ „ of Agrotis hyperborea (Pachnobia alpina), Notes on the	109, 164, 183
„ „ „ Anarta cordigera, Description of the ... ..	12
„ „ „ melanopa, „ „ .. ..	11
„ „ „ Apatura Iris, Supplementary notes on the ... ..	3
„ „ „ Miana fasciuncula, Description of the ... ..	62
„ „ „ of Acidalia emarginata, Description of the ... ..	13
„ „ „ Axylia putris, „ „ .. ..	248
„ „ „ Coremia propugnata, „ „ .. ..	213
„ „ „ Cryptoblabes bistriga, „ „ .. ..	111
„ „ „ Epunda lutulenta, „ „ .. ..	163, 184
„ „ „ Herminea grisealis, „ „ .. ..	110
„ „ „ Lobophora hexapterata, „ „ .. ..	249
„ „ „ Nola albulalis, „ „ .. ..	63
„ „ „ Pterophorus lithodactylus „ „ .. ..	236
„ „ „ Pyrameis Atalanta, On variation in the ... ..	209
Larvæ and habits of Ebulea stachydalis and sambucalis, Description of the	133
„ „ „ of Triphæna subsequa, How to find the ... ..	210
Lepidoptera, British, Collections of ... ..	279
„ „ „ captured at Rannoch in July, 1876, List of ... ..	139
„ „ „ „ during an excursion to Switzerland and the Italian Lakes ... ..	243
„ „ „ from North Wales, Notes on ... ..	108
„ „ „ Heterocera, On stridulation in some ... ..	275
„ „ „ in East Sussex, Captures of ... ..	37
„ „ „ „ 1876, Notes on ... ..	211
„ „ „ „ the Isle of Man, Notes on Dianthocæcia cæsia and	143

	PAGE
Lepidoptera, Notes on Mr. Atkinson's collection of East Indian, with descriptions of new species of <i>Rhopalocera</i> ... ..	149
"    , Stray notes on ... ..	231
Leucania, The supposed new British species of ... ..	10
"    vitellina in the New Forest, Capture of ... ..	64
Leucochroism, On Melanochroism and ... ..	145
Light, as a means of attracting Lepidoptera, Notes on ... ..	246
Lobophora hexapterata, Description of the larva of ... ..	249
"    viretata, " " " and habits of ... ..	185
"    "    double-brooded ... ..	209
Locusts in Yorkshire ... ..	179, 216
Longicorn Coleoptera from New Zealand, New species of ... ..	52
Lycæna Argiolus, Natural history of ... ..	29, 62, 138
Lycetus brunneus found in London, Note on ... ..	137
Lygus pellucidus in Morayshire ... ..	188
Megaloceræa ( <i>Trigonotylus</i> ) <i>ruficornis</i> , Note on a variety of ... ..	87
Melanism, On ... ..	130, 145, 215, 256
Melanochroism and Leucochroism, On ... ..	145
Meloë and Mylabris as cures for hydrophobia ... ..	167
Metamorphoses of <i>Xylophagus cinctus</i> and <i>X. ater</i> ... ..	160, 216
Metamorphosis of <i>Stauropus fagi</i> ... ..	231
Miana fasciuncula, Description of the larva, &c., of ... ..	62
"Monograph of the British Aphides;" Vol. I, by G. B. Buckton: Review	238
"    "    Geometrid Moths or Phalaenidæ of the United States;"	
by A. S. Packard, Jun.: Review ... ..	115
"Monographia Lygæidarum Hungariæ;" by Dr. Horváth: Review ... ..	18
Morayshire Noctux and Hemiptera-Heteroptera ... ..	166
Mounting Typhlocybidæ, On ... ..	237, 282
Myelois ceratonix in England, Re-occurrence of ... ..	281
Mylabris as cures for hydrophobia, Meloë and .. ...	167
Myrmedonia collaris, Habits of ... ..	64
Natural history of <i>Asthena sylvata</i> ... ..	213
"    " <i>Catocala promissa</i> ... ..	233
"    " <i>Crambus tristellus</i> ... ..	14
"    " <i>Cymatophora ocularis</i> ... ..	90
"    " <i>Lycæna Argiolus</i> ... ..	29, 62, 138
Nematus gallicola, Galls of, occurring over water ... ..	166
New British species of Leucania, The supposed ... ..	10
"    species of Longicorn Coleoptera from New Zealand .. ...	52
"    Zealand Coleoptera, Descriptions of some new genera and species of	20, 52, 70, 97, 190, 265
"    "    , Description of three new species of Hemiptera-Heteroptera from	105
"    "    , List of the Butterflies now known to inhabit ... ..	152
Newman, Death of Edward ... ..	45
Noctux and Hemiptera-Heteroptera, Morayshire ... ..	166
"    in the Isle of Wight, Captures of rare ... ..	139
Nola albulalis, Description of the larva of ... ..	63
"    "    "    "    pupa " ... ..	94

	vii. PAGE
Note on a variety of <i>Megaloceræ</i> ( <i>Trigonotylus</i> ) <i>ruficornis</i> .. .. .	87
„ <i>Agalliaestes Wilkinsoni</i> ... .. .	87
„ an unrecorded British species of <i>Helophorus</i> .. .. .	40
„ <i>Bruchus pisi</i> ... .. .	181
„ <i>Corixa vernicosa</i> and <i>C. Douglasi</i> ... .. .	137
„ <i>Ebulea stachydalis</i> ... .. .	93
„ <i>Lyctus brunneus</i> found in London ... .. .	137
„ Mr. Buxton's collections ... .. .	57, 89, 223
„ parasitic Acari ... .. .	114, 166
„ sugaring ... .. .	16
„ the pendulum action in flight of ♂ <i>Hepialus humuli</i> ... .. .	63
„ <i>Trioza Walkeri</i> and <i>Chermes rhamni</i> ... .. .	255
Notes from Lourenço Marques, South Africa .. .. .	89
„ on British Tenthredinidæ and Cynipidæ ... .. .	173, 196
„ „ „ Tortrices ... .. .	158
„ „ <i>Cidaria reticulata</i> ... .. .	142
„ „ <i>Dianthœcia cœsia</i> and the Lepidoptera of the Isle of Man ... .. .	143
„ „ Lepidoptera from North Wales ... .. .	108
„ „ „ in 1876 ... .. .	211
„ „ Light, as a means of attracting Lepidoptera ... .. .	246
„ „ Mr. Atkinson's collection of East Indian Lepidoptera, with descriptions of new species of <i>Rhopalocera</i> ... .. .	149
„ „ Mr. Buxton's Eastern Butterflies, with description of a new species of <i>Poritia</i> ... .. .	223
„ „ <i>Rhopalocera</i> from Angola, with description of a new species of <i>Deudorix</i> from Zanzibar ... .. .	205
„ „ some additional species of <i>Psyllidæ</i> new to Britain ... .. .	137
„ „ „ species of <i>Psyllidæ</i> ... .. .	40, 67
„ „ „ <i>Tineina</i> observed in 1876 .. .. .	165
„ „ the degree of tendency to variation exhibited by the Lepidoptera of Pembroke and its neighbourhood ... .. .	201
„ „ „ larva, &c., of <i>Agrotis hyperborea</i> ( <i>Pachnobia alpina</i> ) ... .. .	109, 164, 183
„ „ „ Tortrices of Pembrokeshire ... .. .	220
Observation on Mr. Hewitson's note respecting Mr. Buxton's collection of orange-tipped Butterflies ... .. .	89
Observations on the development, indoors, of hibernating pupæ of Lepidoptera .. .. .	16
Occurrence in Britain of <i>Cardiophorus rufipes</i> ... .. .	227
„ of <i>Chœrocampa nerii</i> at Hemel Hempstead ... .. .	138
„ „ <i>Dichroscytus rufipennis</i> ... .. .	65
„ „ <i>Epunda lutulenta</i> , var. <i>luneburgensis</i> in Scotland ... .. .	141, 164
„ „ <i>Gelechia</i> ( <i>Doryphora</i> ) <i>morosa</i> in England ... .. .	144
„ „ <i>Pachetra leucophæa</i> near Ashford, Kent ... .. .	64
„ „ <i>Tinea angustipennis</i> in England ... .. .	143
„ „ <i>Vespa crabro</i> in the north ... .. .	88
<i>Odynerus</i> new to Britain, Captures of rare Coleoptera, Hemiptera, and Hymenoptera at Chobham; including an ... .. .	113
Orthopterous insect, Strange habit of an ... .. .	138
<i>Orthosia suspecta</i> , Capture of a black variety of ... .. .	109
<i>Pachetra leucophæa</i> near Ashford, Kent, Occurrence of ... .. .	64

	PAGE
( <i>Pachnobia alpina</i> ), Notes on the larva, &c., of <i>Agrotis hyperborea</i> ...	109, 164, 183
"    "    , Westwood, = <i>hyperborea</i> , Zetterstedt ...	90
<i>Pædisca rufimitrana</i> new to Britain ...	187
<i>Papilio</i> , Description of three new species of, from the collection of Mr. Herbert Druce ...	56
Parasitic Acari, Note on ...	114, 166
Pendulum action in flight of ♂ <i>Hepialus humuli</i> , Note on the ...	63
Phytophaga, Descriptions of hitherto uncharacterized ...	6, 126
"    , Diagnoses of undescribed species of ...	79
<i>Pieris Daplidice</i> at Folkstone ...	138
"    "    near Southend, Essex, Capture of ...	108
Plague of Spiders ( <i>Lycosa saccata</i> ) ...	42
Precocious appearance of <i>Melolontha vulgaris</i> ...	253
Preserving Dragon-flies, On ...	88
"Proceedings of the Natural History Society of Glasgow:" Review ...	95
<i>Psallus</i> , Diagnosis of a new species of ...	154
<i>Psyllidæ</i> , Diagnoses of certain species of, which may be expected to occur in Britain ...	66
"    new to Britain, Notes on some additional species of ...	137, 282
"    , Notes on some species of ...	40, 67
<i>Pterophorus lithodactylus</i> , Description of the larva of ...	236
Pupa of <i>Nola albulalis</i> , Description of the ...	94
Pupæ of <i>Lepidoptera</i> , Observations on the development, indoors, of hibernating	16
<i>Pyrameis Atalanta</i> , On variation in the larva of ...	209
"    Huntera in England ...	183, 230
Recent captures of <i>Hemiptera</i> ...	112
"Report, Eighth Annual, on the noxious, beneficial, and other insects of the State of Missouri;" by C. V. Riley: Review ...	94
<i>Rhopalocera</i> , Notes on, from Angola, with description of a new species of <i>Deudorix</i> from Zanzibar ...	205
Sale of the late Mr. Edwin Brown's collections ...	257
Scarcity of autumnal <i>Homoptera</i> ...	166
<i>Sesia philanthiformis</i> in South Wales ...	92
Sounds produced by <i>Lepidoptera</i> , On ...	229
<i>Sphinx convolvuli</i> at Exeter, <i>Acherontia Atropos</i> and ...	138
Spiders, A plague of ( <i>Lycosa saccata</i> ) ...	42
Spitzbergen, Descriptions of <i>Hymenoptera</i> from, collected by the Rev. A. E. Eaton ...	241
Squirrel versus hornet ...	254
Stack Rocks, The ...	249
<i>Stauropus fagi</i> , Metamorphosis of ...	231
Strange habit of an <i>Orthopterous</i> insect ...	138
"    hibernaculum, A... ...	16
Stray notes on <i>Lepidoptera</i> ...	231
Stridulation in some <i>Lepidoptera-Heterocera</i> , On ...	273
"    "    the genus <i>Acherontia</i> , On ...	217
"    "    " <i>Ageronia</i> , " ...	207
"    "    " <i>Vanessa</i> , " ...	169, 208

	ix.
	PAGE
Sugaring, Note on .. .. .	16
Supposed new British species of <i>Leucania</i> .. .. .	10
Swiss Lepidoptera, A few remarks on some .. .. .	57
Tenthredinidæ and Cynipidæ, Notes on British .. .. .	173, 196
<i>Thecla w-album</i> in Worcestershire .. .. .	166
<i>Tillus unifasciatus</i> and <i>Xylotrogus brunneus</i> near London, Capture of .. .. .	65
<i>Tinea angustipennis</i> in England, Occurrence of .. .. .	143
<i>Tineina</i> observed in 1876, Notes on some .. .. .	165
Tortrices, Notes on British .. .. .	158
" of Pembrokeshire, Notes on the .. .. .	220
" , On a peculiar form of variation in .. .. .	252
"Transactions of the Entomological Society of London for 1876:" Review .. .. .	259
Transformation of <i>Trombidium</i> , On the .. .. .	166
<i>Trioza juniperi</i> , Mey.-Dür, Note on .. .. .	282
" <i>Walkeri</i> and <i>Chermes rhamnii</i> , Note on .. .. .	255
<i>Triphæna subsequa</i> , How to find the larvæ of .. .. .	210
<i>Trombidium</i> , On the transformation of... .. .	166
Typhlocybidæ, On mounting .. .. .	237, 282
<i>Vanessa</i> , On stridulation in the genus .. .. .	169, 208
Variation exhibited by the Lepidoptera of Pembroke and its neighbourhood, Notes on the degree of tendency to .. .. .	201
" in the larva of <i>Pyrameis Atalanta</i> , On .. .. .	209
" , Tortrices, On a peculiar form of .. .. .	252
Variety of <i>Megalocera</i> ( <i>Trigonotylus</i> ) <i>ruficornis</i> , Note on a .. .. .	87
" <i>Orthosia suspecta</i> , Capture of a black .. .. .	109
<i>Velleius dilatatus</i> , A new habitat of .. .. .	136
Vernal broods of white butterflies in the Isle of Man .. .. .	10
<i>Vespa crabro</i> in the north, Occurrence of .. .. .	88
White ants at Vienna, Colony of American .. .. .	17
" butterflies in the Isle of Man, The vernal broods of .. .. .	10
<i>Xylophagus cinctus</i> and <i>X. ater</i> , Metamorphoses of .. .. .	160, 216
<i>Xylotrogus brunneus</i> near London, Capture of <i>Tillus unifasciatus</i> and .. .. .	65
<i>Zelleria</i> , On a new species of the genus .. .. .	1
"Zoological Classification;" by F. P. Pascoe: Review .. .. .	258

## INDEX OF SUBJECTS NOTICED IN THE PROCEEDINGS OF THE ENTOMOLOGICAL SOCIETY OF LONDON.

	PAGE
Acacia, Thorns of, inhabited by a species of <i>Cryptoceridæ</i> .. .. .	168
<i>Acanthis hirundinis</i> .. .. .	117
<i>Acentropus</i> , Notes on .. .. .	168
Amazons, Lepidoptera of the .. .. .	284
Anniversary Meeting .. .. .	239
<i>Bhutanitis Lidderdali</i> .. .. .	240

	PAGE
Blattæ destroying pseudo-bulbs of an Orchid ... ..	168
Brachycentrus subnubilus, Larva and case of ... ..	189
Bruchidæ in Coroza nuts (or vegetable ivory) ... ..	10, 47
"    "    nuts of Copernicia cerifera ... ..	47
Bruchus in seeds of a Leguminous plant from Egypt ... ..	47
Callimorpha Hera taken near Dover ... ..	144
Camellia, Coccus upon ... ..	68
Cirolana from the fin of a flying fish ... ..	264
Cleridæ, New species of ... ..	47
Coccus camelliæ ... ..	68
Coleoptera, New or rare British species of ... ..	96, 265, 284
"    Number of species of ... ..	190
Costa Rica, Rhopalocera of ... ..	10
Crymodes exulis ... ..	144
Cryptocephalidæ, New genera and species of ... ..	240
Cryptoceridæ, New species of ... ..	144
"    Species of, inhabiting thorns of an Acacia ... ..	168
Curculionidæ from imported Orchids, Species of ... ..	144
Cynips, The presumed male of ... ..	96
Danaïs Archippus, Geographical distribution of ... ..	265
"    "    taken in England ... ..	240
Deilephila euphorbiæ, Supposed capture of, in Britain ... ..	144
Deiopeia pulchella taken at Falmouth ... ..	190
Diplognathus, Cocoon and pupa of .. ...	284
Dragon-flies, Parasites upon ... ..	95
Ennomos angularia ... ..	144
Epipyrops anomala ... ..	96
Epunda lutulenta, var. luneburgensis ... ..	144
Eumolpidæ, New species of ... ..	240
Euphorbia, Coccus upon ... ..	69
Formicidæ from New Zealand ... ..	117
Fulgora candelaria, Lepidopterous parasite upon ... ..	96
Halticidæ, New genera and species of ... ..	48, 69
Harvest bug, Annoyance caused by the ... ..	117
Heliciform Lepidopterous case of larva from Zanzibar ... ..	240
Hemiptera-Heteroptera, Synopsis of British species of ... ..	96
"    of Siberia ... ..	265
"    , Rare British species of... ..	117
Hepialus, Larva of an Australian species of, attacked by fungus ... ..	17
Horse chestnut, Damaged twigs of ... ..	68, 117
Hymenoptera of New Zealand ... ..	47, 117
"    , Rare British species of ... ..	117
Ithomia Tutia, Varieties of ... ..	10
Lepidoptera from Bangkok ... ..	284
"    , New species of Diurnal, from Queensland ... ..	96
"    of the Amazons ... ..	284
"    , Rare species of British ... ..	144, 169

	xi.
	PAGE
Lepidoptera, Seasonal dimorphism in ... ..	284
„ , Varieties of British ... ..	10, 47, 69, 144, 240, 265
Leptis autumnalis, Annoyance caused by ... ..	117
Locusts from Yorkshire ... ..	189
„ , Ravages of, in Spain ... ..	10, 96
Lycidæ, Monograph of the Australian species of ... ..	284
Microgaster glomeratus: does it infest Pieris rapæ? ... ..	190
Mimosa, Heliciform Lepidopterous case on, from Zanzibar ..	240
Monochamus sartor captured in London ... ..	264
Mustha spinulosa ... ..	168
Mylabris, Primitive larvæ of ... ..	190
Nematus gallicola, Notes on ... ..	96
New Zealand, Hymenoptera of ... ..	47, 117
Noctua, Pupa of a British species of, attacked by fungus ...	47
Notæ Dipterologicæ ... ..	117
Notodonta trilophus from Ipswich ... ..	284
Ophideres materna taken at sea ... ..	284
Orchid, Pollen mass of, attached to haustellum of a moth ...	168
Polynema ovulorum ... ..	144
Prosopistoma, Notes on ... ..	284
Pruritus caused by a Trombidium ... ..	240
Pseudomyrma and Tetraponera, New species of ... ..	284
Psyllidæ, British species of ... ..	68
Queensland, New species of Diurnal Lepidoptera from ...	96
Rhopalocera of Costa Rica ... ..	10
Saturnidæ in the collection of the Royal Dublin Society ...	240
Seasonal dimorphism in Lepidoptera ... ..	284
Siberia, Hemiptera of ... ..	265
Spain, Ravages of locusts in ... ..	10, 96
Staphylinidæ of Central America ... ..	48
„ „ the Amazon Valley ... ..	117
Stylopidæ, A species of, parasitic upon Homoptera ... ..	284
Systropus, Habits of ... ..	240
Telephoridæ, New species of ... ..	47
Tenthredinidæ, New genera and species of ... ..	69
Trombidium, Pruritus caused by a ... ..	240



## SPECIAL INDEX.

COLEOPTERA.		PAGE
<i>Agonelytra longipennis</i> ... ..	52	
<i>Alema</i> (g. n.), Sharp ... ..	98	
<i>paradoxa</i> (sp. n.), Sharp ... ..	98	
<i>Amara alpina</i> ... ..	112	
<i>Ancistria tarsalis</i> (sp. n.), C. O. Waterhouse	121	
<i>Ancistropterus Brouni</i> (sp. n.), Sharp ... ..	97	
<i>mundus</i> " " ... ..	97	
<i>Aphilon</i> (g. n.), Sharp ... ..	100	
<i>enigma</i> (sp. n.), Sharp ... ..	100	
<i>Aphodius Brouni</i> " " ... ..	71	
<i>distans</i> " " ... ..	70	
<i>Pascoei</i> " " ... ..	71	
<i>suspectus</i> , " " ... ..	70	
<i>Apocrypta coccinelloides</i> (sp. n.), Baly ... ..	224	
<i>pallida</i> " " ... ..	224	
<i>purpurea</i> " " ... ..	224	
<i>Arnomus</i> (g. n.), Sharp ... ..	99	
<i>Brouni</i> (sp. n.), Sharp ... ..	99	
<i>Arthropus</i> (g. n.) ... ..	75	
<i>Brouni</i> (sp. n.) " ... ..	76	
<i>Astetholea lepturoides</i> (sp. n.), H. W. Bates	53	
<i>Brontes pleuralis</i> (sp. n.), Sharp ... ..	270	
<i>Bruchus pisi</i> on <i>Sisymbrium</i> ... ..	181	
<i>Buprestis Enysi</i> (sp. n.), Sharp ... ..	193	
<i>Callispa africana</i> (sp. n.), Baly ... ..	127	
<i>elegans</i> " " ... ..	126	
<i>Camirus</i> (g. n.), Sharp ... ..	23	
<i>convexus</i> (sp. n.), Sharp ... ..	24	
<i>thoracicus</i> " " ... ..	23	
<i>Cardiophorus rufipes</i> ... ..	227	
<i>Carithea</i> (g. n.), Baly ... ..	226	
<i>quadripustulata</i> (sp. n.), Baly ... ..	226	
<i>Carystea micans</i> " " ... ..	80	
<i>Cerophysa Wallacii</i> " " ... ..	227	
<i>Cetonia aurata</i> and <i>ænea</i> in Isle of Man ...	65	
<i>Cryptamorpha</i> (Synonymy of species of)	122	
<i>fasciata</i> , Woll. ... ..	122	
<i>triguttata</i> (sp. n.),		
C. O. Waterhouse	123	
<i>Cyclonotum marginale</i> (sp. n.), Sharp ... ..	21	
<i>Didymocantha ægrota</i> (sp. n.), H. W. Bates	52	
<i>Dietta</i> (g. n.), Sharp ... ..	78	
<i>sperata</i> (sp. n.), Sharp ... ..	78	
<i>Disonycha ornata</i> (sp. n.), Baly ... ..	80	
<i>Disterna obtusipennis</i> (sp. n.), H. W. Bates	54	
<i>Doryphora bivittaticollis</i> (sp. n.), Baly ... ..	273	
<i>10-lineata</i> " " ... ..	181, 253	
<i>Haroldi</i> (sp. n.), Baly ... ..	273	
<i>ingenua</i> " " ... ..	273	
<i>pulchella</i> " " ... ..	273	
<i>Downesia strigicollis</i> " " ... ..	128	
<i>Drotus</i> (g. n.), Sharp ... ..	195	
<i>elegans</i> (sp. n.), Sharp ... ..	194	
<i>Ectemnorhinus Eatoni</i> (sp. n.),		
C. O. Waterhouse	51	
<i>Enarsus rudis</i> (sp. n.), Sharp ... ..	191	
<i>Wakefieldi</i> , (sp. n.), Sharp ... ..	190	
<i>Enneamera australis</i> " Baly ... ..	82	
<i>fulviventris</i> , " " ... ..	82	
<i>limbata</i> " " ... ..	82	
<i>thoracica</i> " " ... ..	82	
<i>Gonophora Chapuisi</i> " " ... ..	129	
<i>Grynoma</i> (g. n.), Sharp ... ..	267	
<i>diluta</i> (sp. n.), Sharp ... ..	267	
<i>fusca</i> " " ... ..	267	
<i>Harpalus discoideus</i> at Chobham ... ..	113	
<i>Hectarthrum</i> (table of species) ... ..	118	
<i>australicum</i> (sp. n.),		
C. O. Waterhouse	119	
<i>dejectum</i> (sp. n.),		
C. O. Waterhouse	120	
<i>penicillatum</i> (sp. n.),		
C. O. Waterhouse	120	
<i>sociale</i> (sp. n.),		
C. O. Waterhouse	119	
<i>uniforme</i> (sp. n.),		
C. O. Waterhouse	120	
<i>Helophorus æqualis</i> , Thoms. ... ..	39	
<i>brevicollis</i> " ... ..	39	
<i>laticollis</i> " ... ..	40	
<i>planicollis</i> " ... ..	39	
<i>strigifrons</i> " ... ..	40	
<i>Hemipeplus Dohrni</i> , Pascoe (hemipterus,		
Dej.) ... ..	121	
<i>marginipennis</i> , Dej., nec. Lec.	121	
<i>Hermæophaga tricolor</i> (sp. n.), Baly ... ..	80	
<i>ventralis</i> " " ... ..	80	
<i>Heterohyx pumilus</i> " Sharp ... ..	192	
<i>Hispopria terminalis</i> " Baly ... ..	127	
<i>Horatopyga ornata</i> " " ... ..	79	
<i>Saundersi</i> " " ... ..	79	
<i>sejuncta</i> " " ... ..	79	

	PAGE
<i>Hybolasius cristatellus</i> (sp.n.), H.W. Bates	55
<i>lanipes</i> " Sharp	195
<i>pedator</i> " H.W. Bates	54
<i>Wakefieldi</i> " "	55
<i>Hydroporus duplex</i> " Sharp	21
<i>Wakefieldi</i> " "	20
<i>Lactica apicicornis</i> " Baly	81
<i>binotata</i> " "	81
<i>fulvipes</i> " "	81
<i>nigripennis</i> " "	81
<i>sellata</i> " "	81
<i>subnitida</i> " "	81
<i>Lema Ariadne</i> " "	9
<i>Buckleyi</i> " "	8
<i>emarginata</i> " "	6
<i>Haroldi</i> " "	7
<i>rufo-limbata</i> " "	9
<i>Saundersi</i> " "	8
<i>transverso-notata</i> " "	7
<i>Lenax</i> (g. n.), Sharp	269
<i>mirandus</i> (sp. n.), Sharp	269
<i>Leperina farinosa</i> " "	266
<i>Wakefieldi</i> " "	191
<i>Leptura sanguinolenta</i> in Scotland	112
<i>Lius Adonis</i> (sp. n.), E. Saunders	48
<i>Ares</i> " "	49
<i>Bacchus</i> " "	50
<i>Castor</i> " "	48
<i>Cycnus</i> " "	49
<i>Ephialtes</i> " "	50
<i>Hades</i> " "	51
<i>Helios</i> " "	50
<i>Hercules</i> " "	49
<i>Otus</i> " "	50
<i>Pollux</i> " "	48
<i>Tereus</i> " "	49
<i>Lorelus</i> (g. n.), Sharp	76
<i>priscus</i> (sp. n.), Sharp	77
<i>Melobasis costata</i> " E. Saunders	155
<i>cupreovittata</i> (sp.n.), E. Saunders	155
<i>igniceps</i> " "	156
<i>læta</i> " "	156
<i>obscura</i> " "	157
<i>rubromarginata</i> " "	156
<i>viridiceps</i> " "	157
<i>viridis</i> " "	158
<i>Meloë and Mylabris as cures for hydrophobia</i>	167
<i>Meloë brevicollis</i> ...	113
<i>Melolontha hippocastani</i> in Isle of Man	65
<i>vulgaris</i> in February	253
<i>Menimus</i> (g. n.), Sharp	73

	xiii.
	PAGE
<i>Menimus Batesi</i> (sp. n.), Sharp	74
<i>cæcus</i> " "	75
<i>crassus</i> " "	74
<i>Metoponcus Brouni</i> " "	22
<i>Myrmedonia collaris</i> , Habits of	61
<i>Orchestes iota</i> at Chobham	113
<i>Parmius</i> (g. n.), Sharp	272
<i>debilis</i> (sp. n.), Sharp	272
<i>longipes</i> " "	272
<i>Paupris</i> (g. n.), Sharp	271
<i>aptera</i> (sp. n.), Sharp	271
<i>Peniticus</i> (g. n.), Sharp	101
<i>antiquus</i> (sp. n.), Sharp	102
<i>suffusus</i> " "	101
<i>Platysoma cognatum</i> " "	25
<i>Prionispa gemmata</i> " Baly	129
<i>Promanus</i> (g. n.), Sharp	267
<i>depressus</i> (sp. n.), Sharp	266
<i>Promecotheca callosa</i> " Baly	128
<i>Psilocnæia Brouni</i> " H. W. Bates	54
<i>Pyronota festiva</i> , Fab.	72
<i>Edwardsi</i> (sp. n.), Sharp	72
<i>munda</i> " "	73
<i>sobrina</i> " "	73
<i>Rhizonium</i> (g. n.),	27
<i>antiquum</i> (sp. n.) "	28
<i>Saphobius Wakefieldi</i> " "	192
<i>Saprinus pedator</i> " "	25
<i>Seboethe quadripustulata</i> , Baly	80
<i>Sisyrnophorus</i> (g. n.), C. O. Waterhouse	125
<i>Bowringi</i> (sp. n.) "	126
<i>maculatus</i> " "	126
<i>Soronia hystrix</i> (sp. n.), Sharp	26
<i>Stenolophus brunnipes</i> (= <i>dorsalis</i> , var.)	113
<i>Stephanorhynchus Lawsons</i> (sp. n.), Sharp	97
<i>Sternaulax lævis</i> " "	24
<i>Telephanus antennatus</i> (sp. n.),	
C. O. Waterhouse	125
<i>cruciger</i> (sp. n.) "	125
<i>felix</i> " "	124
<i>incommodus</i> , Walker	124
<i>pictus</i> (sp.n.), C.O. Waterhouse	123
<i>spiniicollis</i> (sp. n.), "	123
<i>trimaculatus</i> , Mots.	124
<i>Telmatophilus depressus</i> (sp. n.), Sharp	28
<i>nitens</i> " "	70
<i>Tillus unifasciatus</i> near London	65
<i>Trogoderma serrigerum</i> (sp. n.), Sharp	270
<i>signatum</i> " "	271
<i>Ulonotus discedens</i> (sp. n.), Sharp	268
<i>integer</i>	268

	PAGE
Velleius dilatatus in rotten wood...	136
Xenoda (g. n.), Baly ...	225
spinicornis (sp. n.), Baly ...	225
Xenoscelis prolixus „ Sharp ...	26
Xuthodes apicalis „ „ ...	193
Batesi „ „ ...	194
Xylotoles bullatus „ H. W. Bates... 53	
pictulus „ „ ...	53
Xylotrogus brunneus near London	65, 137

## DIPTERA.

Xylophagus ater, Metamorphoses of...	162, 216
cinctus, „ „ ...	160, 216

## HEMIPTERA-HETEROPTERA.

Acanthia hirundinis ...	113
Agalliasites Wilkinsoni ...	87
Aneurus Brouni (sp. n.), F. B. White ...	106
Antennæ, Abnormal structure of ...	188
Berytus setipennis (sp. n.), E. Saunders...	102
Calocoris ticinensis ...	113
Captures at Avicmore ...	112
Chobham ...	113
in Scotland ...	112
Chlamydatus pygmæus ...	113
Corixa vernicosa ...	137
Corizus maculatus ...	113
Deraeocoris (Calocoris) Zelleri (sp. n.), Scott	104
Dichroscytus rufipennis ...	65
Eremocoris plebeius ...	186, 188
Galeatus scrophicus (sp. n.), E. Saunders	103
Ischnodemus Championi (sp. n.), „	103
Lacometopus clavicornis, Economy of...	236, 283
Lygæosoma Lownii (sp. n.), E. Saunders	103
Lygus pellucidus ...	188
Macrocoleus tanacetii ...	113
Megaloceræa ruficornis ...	87
Nabis Poweri ...	113
Plesiodema pinetellum ...	85
Plociomerus Douglassi (sp. n.), F. B. White	105
luridus ...	113
Psallus diminutus ...	86
Salda australis (sp. n.), F. B. White ...	105
Temnostethus nigricornis...	86

## HEMIPTERA-HOMOPTERA.

Aphalara affinis ...	67
artemisæ ...	67, 282
exilis ...	41, 68
flavipennis ...	41, 68
nervosa ...	67

	PAGE
Aphides, Monograph of British ...	238
Chermes rhamni ...	255
Chlorita viridula flying in December ...	189
Dicranoneura citrinella ...	113
Eupteryx notatus ...	113
signatipennis ...	113
stachydearum ...	113
Liburnia flaveola ...	130
Douglassi ...	112
Psylla alaterni ...	256
betulæ ...	282
cerastii ...	42
costalis ...	137
cratægi ...	137
ixophila ...	42, 67
pyricola ...	137
stenolabis ...	137
sylvicola ...	68
visci ...	40
Psyllidæ, Note on ...	41, 67, 166, 255
Rhinocola aceris ...	42
speciosa ...	66
Tettigometra impressopunctata ...	112
Trioxa abdominalis...	137
abieticola ...	137, 256
flavipennis ...	42
juniperi ...	66, 282
rhamni ...	255
rhamnicola ...	256
sylvicola ...	68
Walkeri ...	255
Typhlocybidae, On mounting ...	237
Scarcity of...	166

## HYMENOPTERA.

Ampulex compressa ...	87
Astata stigma, ♂, at Chobham ...	114
Aulax hieracii ...	200
Basus hyperboreus (sp. n.), Marshall	241
Ceroptres cerri ...	200
Cræsus latipes bred ...	176
Cryptocampus pentandræ...	178
Dineura stilata destructive ...	175
Diplorhoptrum domesticum ...	254
Elampus Panzeri ...	114
Emphytus calceatus ...	199
Hemichroa alni, ♂ ...	175
Ichneutes reunitor at Spitzbergen ...	242
Mesochorus dolorosus (sp. n.), Marshall...	242
Mesolius arctophylax ...	241
Miscophus bicolor ...	114

	PAGE
<i>Nematus abbreviatus</i> ... ..	176
<i>anglicus</i> (sp. n.), Cameron ... ..	178
<i>bilineatus</i> ... ..	177
<i>gallicola</i> over water ... ..	166
<i>imperfectus</i> ... ..	176
<i>longiserra</i> ... ..	177
<i>pallescens</i> ... ..	177
<i>pavidus</i> destructive ... ..	176
<i>vesicator</i> ... ..	178
<i>Westermanni</i> ... ..	178
<i>Odynerus reniformis</i> at Chobham ... ..	114
<i>Orthocentrus reptilis</i> (sp. n.), Marshall ... ..	242
<i>Pentacrita nigra</i> ... ..	200
<i>Perilistus caninus</i> ... ..	200
<i>Pimpla</i> in <i>Nematus</i> gall ... ..	200
<i>Selandria aperta</i> ... ..	198
<i>stramineipes</i> , Two forms of ... ..	197
<i>Spathogaster albipes</i> ... ..	199
<i>Taxonus equiseti</i> ... ..	196
<i>Tenthredo atra</i> and <i>dispar</i> ... ..	198
<i>mesomela</i> , Larva of ... ..	199
<i>Torymus hibernans</i> ... ..	200
<i>Vespa cincta</i> ... ..	254
<i>crabro</i> in <i>Glencoe</i> ... ..	88

# LEPIDOPTERA.

<i>Acherontia Atropos</i> ... 138, 210, 217, 252	
<i>Acidalia emarginata</i> , Larva of ... ..	13
<i>Adolias Satropaces</i> (sp. n.), Hewitson ... ..	160
<i>Emona Amathusia</i> ... ..	160
<i>Lena</i> ... ..	160
<i>Ageronia Feronia</i> ... ..	207
<i>Agrotis agathina</i> ... ..	11
<i>alpina</i> ... ..	90
<i>hyperborea</i> , Larva of ... ..	109, 164, 183
<i>Anarta cordigera</i> , " " ... ..	12
<i>melanopa</i> , " " ... ..	11
<i>Richardsoni</i> ... ..	229
<i>Anesychia bipunctella</i> (echiella) ... ..	165
<i>Apatura Iris</i> , Larva of ... ..	3
<i>Aporophyla australis</i> ... ..	139
<i>Argynnis improba</i> (sp. n.), Butler ... ..	206
<i>Argyrophenga antipodum</i> ... ..	168
<i>Asthena sylvata</i> , Larva of... ..	213
<i>Axylia putris</i> , " " ... ..	248
<i>Bhutanitis Lidderalii</i> ... ..	160
<i>Bryophila glandifera</i> ... ..	108
<i>Catocala fraxini</i> ... ..	108
<i>promissa</i> , Larva of ... ..	233
<i>Catoptria aspidiscana</i> ... ..	16
<i>cæcimaculana</i> ... ..	223
<i>expallidana</i> ... ..	223, 223

	PAGE
<i>Chrysophanus Boldenarum</i> ... ..	153
<i>Enysii</i> (sp. n.), Butler ... ..	153
<i>Salustius</i> ... ..	153
<i>Cidaria reticulata</i> ... ..	109, 142
<i>Collix sparsata</i> ... ..	212
<i>Coremia propugnata</i> , Larva of ... ..	213
<i>Crambus tristellus</i> , " " ... ..	14
<i>Cryptoblabes bistriga</i> " " ... ..	111
<i>Cymatophora flavicornis</i> , Eggs of ... ..	210
<i>ocularis</i> , Larva of ... ..	90
<i>Danaïs Archippus</i> ... ..	107
<i>Dasyampa rubiginea</i> ... ..	162
<i>Dasytoma salicella</i> ... ..	166
<i>Debis Serbonis</i> (sp. n.), Hewitson ... ..	151
<i>Deiopeia pulchella</i> ... ..	139, 139, 163
<i>Depressaria costosa</i> ... ..	282
<i>Deudorix Dariaves</i> (sp. n.), Hewitson ... ..	205
<i>Dianthœcia cæsia</i> ... ..	143, 163
, Eggs of... ..	210
<i>capsophila</i> ... ..	143, 231
<i>Diasemia literalis</i> ... ..	36, 93
<i>Dodona Deodata</i> (sp. n.), Hewitson ... ..	151
<i>Ebulea sambucalis</i> , Larva of ... ..	133
<i>stachydalis</i> ... ..	64, 93
, Larva of ... ..	133
<i>Elachista pollutella</i> ... ..	61
<i>subnigrella</i> ... ..	16
<i>Epunda lutulenta</i> , Larva of ... ..	163, 184
, var. <i>luneburgensis</i> ... ..	141, 164
<i>Erebia Ceme</i> ... ..	58
<i>Euchromia purpurana</i> ... ..	222
<i>Eupithecia albipunctata</i> , var. <i>angelicata</i> , Barrett 278	
<i>fraxinata</i> ... ..	212
<i>knautiata</i> ... ..	185
<i>minutata</i> ... ..	185
<i>subciliata</i> ... ..	108
<i>Eupœcilia flaviciliaria</i> ... ..	223
<i>hybridella</i> ... ..	169
<i>pallidana</i> ... ..	223
<i>Gelechia humeralis</i> ... ..	38
<i>lutulentella</i> ... ..	187
<i>morosa</i> ( <i>Doryphora</i> ) ... ..	144
<i>Glaucopteryx Sabiniaria</i> ... ..	229
<i>Hadena hyperborea</i> ... ..	80
<i>Harma Hecateæ</i> (sp. n.), Hewitson ... ..	277
<i>Heliothis scutosa</i> ... ..	280
<i>Hepialus humuli</i> ... ..	63
<i>Herminea grisæalis</i> , Larva of ... ..	110
<i>Hesperia cephalæ</i> (sp. n.), Hewitson ... ..	152
<i>cerata</i> " " ... ..	152
<i>Hydrelia unca</i> ... ..	212

	PAGE
<i>Laria Rossii</i> ... ..	228
<i>Laverna epilobiella</i> , Römer ... ..	165
<i>Leucania albipuncta</i> ... ..	139
<i>vitellina</i> ... ..	64
<i>Lobophora hexapterata</i> , Larva of ... ..	249
<i>viretata</i> ... ..	209, 231
" , Larva of ... ..	185
<i>Lycæna Argiolus</i> , " " ... ..	29, 62, 138
<i>minimus</i> ... ..	58
<i>Phœbe</i> ... ..	153
<i>Melanitis Beza</i> (sp. n.), Hewitson ... ..	179
<i>Miana fasciuncula</i> , Larva of ... ..	62
<i>Myelois ceratonis</i> ... ..	281
<i>Myrina Symira</i> (sp. n.), Hewitson ... ..	152
<i>Noctua sobrina</i> ... ..	140
<i>Nola albulalis</i> , Larva of ... ..	63
" , Pupa of ... ..	94
<i>Nonagria lutosa</i> ... ..	10
<i>Ornix anglicella</i> ... ..	165
<i>Orthosia suspecta</i> , Black variety of ... ..	109
<i>Orthotania ericetana</i> ... ..	222
<i>Pachetra leucophæa</i> ... ..	64
<i>Pachnobia alpina</i> ... ..	90, 140
" , Larva of ... ..	109, 164, 183
<i>Pædisca rufimitrana</i> ... ..	187
<i>Papilio auriger</i> (sp. n.), Butler ... ..	57
<i>rhodifer</i> " " ... ..	57
<i>tragicus</i> " " ... ..	56
<i>Parnassius Apollo</i> ... ..	58
<i>Penthina sellana</i> ... ..	220
<i>Pernodaimon Pluto</i> ... ..	153

	PAGE
<i>Peronea Schalleriana</i> ... ..	221
<i>Pieris Daplidice</i> ... ..	108, 138
<i>Poritia Padiada</i> (sp. n.), Hewitson ... ..	223
<i>Pterophorus lithodactylus</i> , Larva of ... ..	236
<i>Pyrameis Atalanta</i> , Larva of ... ..	209
<i>Huntera</i> ... ..	183, 231
<i>Sciaphila perterana</i> ... ..	221
<i>Sesia philanthiformis</i> ... ..	92
<i>Sphinx convolvuli</i> ... ..	138
<i>Spilonota incarnatana</i> ... ..	221
<i>Stauropus fagi</i> , Larva of ... ..	231
<i>Stigmonota dorsana</i> ... ..	158
<i>orobana</i> ... ..	158
<i>Teinopalpus imperialis</i> ... ..	150
<i>Thecla W-album</i> ... ..	166
<i>Tinea angustipennis</i> ... ..	143
<i>Tischeria angusticollis</i> ... ..	165
<i>dodonæa</i> ... ..	165
<i>Triphæna subsequa</i> ... ..	139
" , Larva of ... ..	210
<i>Vanessa Antiopa</i> ... ..	208
<i>Io</i> ... ..	170
<i>urticæ</i> ... ..	171
<i>Zelleria fusca</i> (sp. n.), Stainton ... ..	1
<i>Zethera Thersites</i> (sp. n.), Hewitson ... ..	178
<i>Zophocessa Atkinsonia</i> , " " ... ..	151

## NEUROPTERA.

<i>Ascalaphus Kolyvanensis</i> , var. <i>Ponticus</i> , McLachlan ... ..	35
-----------------------------------------------------------------------------	----

## INDEX TO CONTRIBUTORS.

	PAGE
Andrews, W. V. ... ..	216
Backhaus, H. ... ..	16
Bairstow, S. D. ... ..	108
Baly, J. S., F.L.S. ... ..	6, 79, 126, 224, 273
Barrett, C. G. ... ..	36, 92, 93, 158, 165, 201, 220, 230, 240, 252, 278, 280
Barrett, J. P. ... ..	63
Bates, H. W., F.L.S. ... ..	52
Birchall, E., F.L.S. ... ..	10, 42, 65, 130, 143, 209, 231, 279
Blackburn, Rev. T., B.A. ... ..	39, 227
Boyd, W. C., F.L.S. ... ..	187
Briggs, T. H., M.A. ... ..	138
Buckler, W. ... ..	3, 14, 29, 62, 90, 110, 111, 133, 138, 185, 233
Buckmaster, C. J. ... ..	139

	PAGE
Butler, A. G., F.L.S. ... ..	56, 89, 152, 206
Cameron, P. ... ..	173, 196
Champion, G. C. ... ..	111, 112, 227
Chapman, T. A., M.D. ... ..	63, 88
Chappell, J. ... ..	181
Cooke, N. ... ..	141
Douglas, J. W. ... ..	42, 67, 109, 112, 136, 137, 166, 181, 188, 189, 236, 253, 255
Dunbar, J. ... ..	253
Dunning, J. W., M.A., F.L.S. ... ..	259
Edwards, J. ... ..	237, 238
Evans, A. H. ... ..	108
Farn, A. B. ... ..	281
Fenn, C. ... ..	184
Fetherstonhaugh, S. R. ... ..	215

	PAGE
Fletcher, J. E. ....	166, 166
Forbes, W. A. ....	243
Fust, H. Jenner, M.A., F.L.S....	16
Gaskell, S. H. ....	254
Gibson-Carmichael, T. D....	166, 230
Gill, H. Battershell, M.D....	10
Hele, N. F. ....	138
Hellins, Rev. J., M.A. ...	11, 12, 93, 138, 183, 210, 213, 240
Hewitson, W.C., F.L.S.....	57, 149, 178, 205, 223, 277
Hodgkinson, J. B. ....	16, 109, 142
Jeffrey, W. R. ....	64
Jones, A. H. ....	162, 163, 208, 209
Jones, A. Vernon ....	183
Jordan, R. C. R., M.D. ....	57
Kirby, W. F. ....	283
Llewelyn, J. T. D., M.A., F.L.S. ...	107, 163
McLachlan, R., F.L.S. ...	17, 35, 64, 181, 216
Marshall, Rev. T. A., M.A., F.L.S....	241
Meade, R. H. ....	114
Meek, E. G....	164
Mesmin, L. ....	65
Meyrick, E. ....	187, 281
Monteiro, J. J. ....	89
Mosley, S. L. ....	88
Murray, Rev. R. P., M.A....	83
Norman, G. ....	11, 166, 188
Packard, A. S., Jun., M.D... ..	228

	PAGE
Piffard, B. ....	138
Porritt, G. T., F.L.S. ...	13, 37, 94, 108, 163, 186, 213, 236, 248
Reuter, Dr. O. M. ....	85, 87, 154, 229
Roebeck, W. Denison... ..	179, 180, 216
Ross, J. G. ....	64
Rothney, G. A. J. ....	87, 254
Rowley, G. D. ....	163
Rye, E. C., F.Z.S. ....	40
Sandison, W. M. ....	16, 210
Saunders, E., F.L.S. ....	49, 102, 113, 155
Scott, J. ....	65, 66, 83, 104, 180, 187, 282
Sharp, D., M.B. ....	20, 70, 78, 94, 97, 190, 265
Stainton, H. T., F.R.S. ...	1, 38, 143, 144
Staudinger, Dr. O. ....	90, 109
Stevens, S., F.L.S. ....	65
Swinton, A. H. ....	169, 207, 217, 273
Thruston, C. F. ....	138
Tugwell, W. H. ....	256
Walker, A. O., F.L.S. ....	211
Walsh, E. L. ....	139
Waterhouse, C. O. ....	51, 118
Wheeler, F. D. ....	139, 246
White, F. Buchanan, M.D., F.L.S....	105, 145, 160, 164, 208, 216, 283
Williams, Rev. H., M.A. ....	210
Wilson, T. ....	211
Young, V. E. L. ....	108

## LIST OF NEW GENERA AND SPECIES DESCRIBED IN THIS VOLUME.

### COLEOPTERA.

GENERA.	PAGE
ALEMA, <i>Sharp</i> .....	98
APHILON, " .....	100
ARNOMUS, " .....	99
ARTHOPUS, " .....	75
CAMIBUS, " .....	23
CARITHERCA, <i>Baly</i> .....	226
DIETIA, <i>Sharp</i> .....	78
DROTUS, " .....	195
GRYNOMA, " .....	267
LENAX, " .....	269
LORELUS, " .....	76
MENIMUS, " .....	73
PARMIUS, " .....	272
PAUPRIS, " .....	271
PENITICUS, " .....	101
PROMANUS, " .....	267
RHIZONTIUM, " .....	27
SISTERNOPHORUS, <i>C. O. Waterhouse</i> .....	125
XENODA, <i>Baly</i> .....	225

### SPECIES.

	PAGE
Alema paradoxa, <i>Sharp, N. Zealand</i> .....	98
Ancistria tarsalis, <i>C. O. Waterhouse, Java</i>	121
Ancistropterus Brouni, <i>Sharp, N. Zealand</i>	97
mundus, " "	97
Aphilon enigma, " "	100
Aphodius Brouni, " "	71
distans, " "	70
Pascoei, " "	71
suspectus, " "	70
Apocrypta coccinelloides, <i>Baly, Borneo</i> ...	224
pallida, " <i>Sumatra</i>	224
purpurea, " <i>Borneo</i> ...	224
Arnomus Brouni, <i>Sharp, N. Zealand</i> ...	99
Arthropus Brouni, " "	76
Astetholea lepturoides, <i>H. W. Bates,</i> <i>New Zealand</i> ...	53
Brontes pleuralis, <i>Sharp,</i> " ...	270
Buprestis Enysi, " "	193
Callispa africana, <i>Baly, Niger</i> .....	127
elegans, " <i>Sumatra</i> .....	126

	PAGE
Camirus convexus, <i>Sharp, N. Zealand</i> ...	24
thoracicus, " " ...	23
Carithea quadripustulata, <i>Baly, Sumatra</i> ...	226
Carystea micans, <i>Baly, W. Australia</i> ...	80
Cerophysa Wallacii, <i>Baly, Sumatra</i> ...	227
Cryptamorphia triguttata, <i>C. O. Waterhouse, Australia</i> ...	123
Cyclonotum marginale, <i>Sharp, N. Zealand</i> ...	21
Didymocantha segrota, <i>H. W. Bates, "</i> ...	52
Dietta sperata, <i>Sharp, N. W. Australia</i> ...	78
Disonycha ornata, <i>Baly, Pebas</i> ...	80
Disterna obtusipennis, <i>H. W. Bates, N. Zealand</i> ...	54
Doryphora bivittaticollis, <i>Baly, Columbia</i> ...	273
Haroldi, " " ...	273
ingenua, " " ...	273
pulchella, " " ...	273
Downesia strigicollis, <i>Baly, Cochinchina</i> ...	128
Drotus elegans, <i>Sharp, N. Zealand</i> ...	194
Ectemnorhinus Eatoni, <i>C. O. Waterhouse, Kerguelen Land</i> ...	51
Enarsus rudis, <i>Sharp, N. Zealand</i> ...	191
Wakefieldi, " " ...	190
Enneamera australis, <i>Baly, W. Australia</i> ...	82
fulviventris, <i>Baly, Amboina</i> ...	82
limbata, " <i>Menado</i> ...	82
thoracica, " <i>Manilla</i> ...	82
Gonophora Chapuisi, " <i>Philippines</i> ...	129
Grynoma diluta, <i>Sharp, N. Zealand</i> ...	267
fusca, " " ...	267
Hectarthrum australicum, <i>C. O. Waterhouse, Australia</i> ...	119
dejectum, <i>C. O. Waterhouse, Batchian</i> ...	120
penicillatum, <i>C. O. Waterhouse, Abyssinia</i> ...	120
sociale, <i>C. O. Waterhouse, New Guinea</i> ...	119
uniforme, <i>C. O. Waterhouse, S. India</i> ...	120
Hemipeplus Dejeani, <i>C. O. Waterhouse, Florida</i> ...	122
Hermæophaga tricolor, <i>Baly, Brazil</i> ...	80
ventralis, " <i>Para</i> ...	80
Heteronyx pumilus, <i>Sharp, N. Zealand</i> ...	192
Hispopria terminalis, <i>Baly, Mindanao</i> ...	127
Horatopyga ornata, " <i>Guinea</i> ...	79
Saundersi, " <i>Algoa Bay</i> ...	79
sejuncta, " <i>S. Africa</i> ...	79
Hybolasius cristatellus, <i>H. W. Bates, N. Zealand</i> ...	55
pedator, " " ...	54
Wakefieldi, " " ...	55
lanipes, <i>Sharp, N. Zealand</i> ...	195
Hydroporus duplex, " " ...	21
Wakefieldi, " " ...	20

	PAGE
Lactica apicicornis, <i>Baly, Amazons</i> ...	81
binotata, " <i>Mexico</i> ...	81
fulvipes, " <i>Pebas</i> ...	81
nigripennis, " <i>Para</i> ...	81
sellata, " " ...	81
subnitida, " " ...	81
Lema Ariadne, " " ...	9
Buckleyi, " <i>Ecuador</i> ...	8
emarginata, " <i>C. of G. Hope</i> ...	6
Haroldi, " <i>Guinea</i> ...	7
rufo-limbata, " <i>Parana</i> ...	9
Saundersi, " <i>Brazil</i> ...	8
transverso-notata, <i>Baly, Guinea</i> ...	7
Lenax mirandus, <i>Sharp, N. Zealand</i> ...	269
Leperina farinosa, " " ...	268
Wakefieldi, " " ...	191
Lius Adonis, <i>E. Saunders, Santarem</i> ...	48
Ares, " " ...	49
Bacchus, " <i>Ega</i> ...	50
Castor, " <i>Parana</i> ...	48
Cycnus, " <i>Bahia</i> ...	49
Ephialtes, " <i>Brazil</i> ...	50
Hades, " <i>Santarem</i> ...	51
Helios, " <i>Ega</i> ...	50
Hercules, " <i>Brazil</i> ...	49
Otus, " <i>New Fribourg</i> ...	50
Pollux, " <i>Parana</i> ...	48
Tereus, " <i>[no loc.]</i> ...	49
Lorelus priscus, <i>Sharp, N. Zealand</i> ...	77
Melobasis costata, <i>E. Saunders, Australia</i> ...	155
cupreovittata, " " ...	155
igniceps, " " ...	156
læta, " " ...	156
obscura, " " ...	157
rubromarginata, " " ...	156
viridiceps, " " ...	157
viridis, " " ...	158
Menimus Batesi, <i>Sharp, N. Zealand</i> ...	74
cæcus, " " ...	75
crassus, " " ...	74
Metoponcus Brouni, " " ...	22
Parmius debilis, " " ...	272
longipes, " " ...	272
Paupris aptera, " " ...	271
Peniticus antiquus, " " ...	102
suffusus, " " ...	101
Platysoma cognatum, " " ...	25
Prionispa gemmata, <i>Baly, Batchian</i> ...	129
Promanus depressus, <i>Sharp, N. Zealand</i> ...	268
Promecotheca callosa, <i>Baly, Australia</i> ...	128
Psilocnæia Brouni, <i>H. W. Bates, N. Zealand</i> ...	54

	PAGE
<i>Pyronota Edwardsi</i> , Sharp, N. Zealand	72
<i>munda</i> , " "	73
<i>sobrina</i> , " "	73
<i>Rhizonium antiquum</i> , " "	23
<i>Saphobius Wakefieldi</i> , " "	193
<i>Saprinus pedator</i> , " "	25
<i>Sebaethe quadripustulata</i> , Baly, Java ...	80
<i>Sisyrnophorus Bowringi</i> , C. O. Waterhouse, Penang	126
<i>maculatus</i> , C. O. Waterhouse, Philippines	126
<i>Soronia hystrix</i> , Sharp, N. Zealand .....	26
<i>Stephanorhynchus Lawsoni</i> , Sharp, N. Zealand	97
<i>Sternaulax laevis</i> , Sharp, N. Zealand ...	24
<i>Telephanus antennatus</i> , C. O. Waterhouse, Dorey	125
<i>cruciger</i> , " "	125
<i>felix</i> , " Ceylon	124
<i>pictus</i> , " Borneo	123
<i>spiniacollis</i> , " Aru ...	123
<i>Telmatophilus depressus</i> , Sharp, N. Zealand	28
<i>nitens</i> , " "	70
<i>Trogoderma serrigerum</i> , " "	270
<i>signatum</i> , " "	271
<i>Ulonotus discedens</i> , " "	268
<i>integer</i> , " "	268
<i>Xenoda spinicornis</i> , Baly, Sarawak .....	225
<i>Xenoscelis prolixus</i> , Sharp, N. Zealand...	26
<i>Xuthodes apicalis</i> , " "	193
<i>Batesi</i> , " "	194
<i>Xylotoles bullatus</i> , H. W. Bates, " "	53
<i>pictulus</i> , " "	53
<b>HEMIPTERA.</b>	
<i>Aneurus Brouni</i> , F. B. White, N. Zealand	106
<i>Berytus setipennis</i> , E. Saunders, Malta...	102
<i>Deraocoris Zelleri</i> , Scott, Palermo .....	104
<i>Galeatus scrophicus</i> , E. Saunders, Pt. Scropha	103
<i>Gnathodus roseus</i> , Scott, Corsica .....	83
<i>Ischnodemus Championi</i> , E. Saunders, Cephalonia	103

	PAGE
<i>Lygaeosoma Lownii</i> , E. Saunders, Galilee	103
<i>Phlepsius filigranus</i> , Scott, Nimes .....	84
<i>Plociomerus Douglassi</i> , F. B. White, N. Zealand	105
<i>Psallus Wollastoni</i> , Reuter, Madeira .....	154
<i>Salda australis</i> , F. B. White, N. Zealand	108
<i>Thamnottetix rubrivenosa</i> , Scott, Corsica	83

## HYMENOPTERA.

<i>Basus hyperboreus</i> , Marshall, Spitzbergen	241
<i>Mesochorus dolorosus</i> , " "	242
<i>Mesolius arctophylax</i> , " "	241
<i>Nematus anglicus</i> , Cameron, England ...	173
<i>Orthocentrus reptilis</i> , Marshall, Spitzbergen	242

## LEPIDOPTERA.

### GENERA.

<i>CATOCALIBRIS</i> , Andrews .....	216
<i>PERCNOIDAIMON</i> [- <i>DEMON</i> ], Butler .....	152

### SPECIES.

<i>Adolias Satropaces</i> , Hewitson, Moulmein	150
<i>Argynnis improba</i> , Butler, Arctic America	206
<i>Chrysophanus Enysi</i> , " N. Zealand ...	153
<i>Debis Serbonis</i> , Hewitson, Darjeeling ...	151
<i>Deudorix Dariaves</i> , " Delagoa Bay	205
<i>Dodona Deodata</i> , " Moulmein .....	161
<i>Harma Hecatæa</i> , " Ashanti .....	277
<i>Hesperia Cephalæ</i> , " Darjeeling ...	152
<i>cerata</i> , " "	152
<i>Melanitis Beza</i> , " Philippines ...	179
<i>Myrina Symira</i> , " Darjeeling ...	152
<i>Papilio auriger</i> , Butler, Gaboon .....	57
<i>rhodifer</i> , " Andamans .....	57
<i>tragicus</i> , " Zambesi .....	58
<i>Poritia Padiada</i> , Hewitson, Singapore ...	223
<i>Zelleria fusca</i> , Stainton, Britain .....	1
<i>Zethera Thermæa</i> , Hewitson, Philippines	178
<i>Zophoessa Atkinsonia</i> , " Darjeeling	151

### NEUROPTERA.

<i>Ascalaphus Kolyvanensis</i> , var. <i>Ponticus</i> , McLachlan, Amasia	35
---------------------------------------------------------------------------	----

## LARVÆ OF BRITISH SPECIES DESCRIBED IN THIS VOLUME.

### LEPIDOPTERA.

	PAGE
<i>Achalia emarginata</i> , G. T. Porritt .....	13
<i>Anarta cordigera</i> , Rev. J. Hellins .....	12
<i>melanopa</i> , " .....	11
<i>Apatura Iris</i> , W. Buckler .....	8
<i>Asthenæ sylvata</i> , Rev. J. Hellins .....	213
<i>Axylia putris</i> , G. T. Porritt .....	249
<i>Catocala promissa</i> , W. Buckler .....	233
<i>Coremia propugnata</i> , G. T. Porritt .....	213
<i>Crambus tristellus</i> , W. Buckler .....	14
<i>Cryptoblabes bistriga</i> , " .....	111
<i>Cymatophora ocularis</i> , " .....	90

	PAGE
<i>Ebulea sambucalis</i> , W. Buckler .....	135
<i>stachydalis</i> , " .....	134
<i>Epunda lutulenta</i> , C. Fenn .....	184
" " G. T. Porritt .....	163
<i>Herminea grisealis</i> , W. Buckler .....	110
<i>Lobophora hexapterata</i> , Rev. J. Hellins ..	240
<i>viretata</i> , W. Buckler .....	185
<i>Lycæna Argiolus</i> , " ..29, 62,	138
<i>Miana fasciuncula</i> , " .....	62
<i>Nola albulalis</i> , J. P. Barrett .....	63
<i>Pterophorus lithodactylus</i> , G. T. Porritt	236



# ADDITIONS TO THE BRITISH INSECT FAUNA BROUGHT FORWARD IN THIS VOLUME.

## COLEOPTERA.

	PAGE
<i>Cardiophorus rufipes</i> , <i>Fourcroy</i> .....	227
<i>Helophorus aequalis</i> , <i>Thoms.</i> .....	39
<i>brevicollis</i> , " .....	39
? <i>laticollis</i> , " .....	40
<i>planicollis</i> , " .....	39
<i>strigifrons</i> , " .....	40

## HEMIPTERA.

<i>Aphalara artemisiae</i> , <i>Först.</i> .....	282
<i>nervosa</i> , " .....	66
<i>Liburnia flaveola</i> , <i>Flor</i> .....	130
<i>Lygus pellucidus</i> , <i>Fieber</i> .....	188
<i>Plesiodema pinetellum</i> , <i>Zett.</i> .....	86
<i>Psallus diminutus</i> , <i>Kirschb.</i> .....	86
<i>Psylla betulae</i> , <i>Lin.</i> .....	282
<i>costalis</i> , <i>Flor</i> .....	137
<i>cratægi</i> , <i>Scop.</i> .....	137
<i>peregrina</i> , <i>Först.</i> ? .....	137
<i>pyricola</i> , " .....	137
<i>pyrisuga</i> , " ? .....	137
<i>stenolabis</i> , <i>F. Löw</i> .....	137
<i>sylvicola</i> , <i>Lethierry</i> .....	68
<i>Temnostethus nigricornis</i> , <i>Zett.</i> .....	86
<i>Trioxa abdominalis</i> , <i>Flor</i> .....	137
<i>abieticola</i> , <i>Först.</i> .....	137

## HYMENOPTERA.

	PAGE
<i>Ceroptres cerri</i> , <i>Mayr</i> .....	200
<i>Hoplocampa chrysorrhæa</i> , .....	174
<i>Nematus abbreviatus</i> , <i>Hartig</i> .....	176
<i>anglicus</i> (sp. n.), <i>Cameron</i> .....	173
<i>bilineatus</i> , <i>Klug</i> .....	177
<i>imperfectus</i> , <i>Zaddach</i> .....	176
<i>longiserra</i> , <i>Thoms.</i> .....	177
<i>pallescent</i> , <i>Htg.</i> .....	177
<i>vesicator</i> , <i>Bremi</i> .....	178
<i>Westermanni</i> , <i>Thoms.</i> .....	178
<i>Odynerus reniformis</i> , <i>Gmel.</i> .....	114
<i>Pentacrita nigra</i> , <i>Thoms.</i> .....	200
<i>Periclistus canina</i> , <i>Htg.</i> .....	200
<i>Selandria aperta</i> , .....	198
<i>Spathogaster albus</i> , <i>Schenck</i> .....	199
<i>Torymus hibernans</i> , <i>Mayr</i> .....	200

## LEPIDOPTERA.

[ <i>Danaus Archippus</i> .....	107]
<i>Eupithecia albiguttata</i> , var. <i>angelicata</i> , <i>Barrett</i> .....	278
<i>Gelechia morosa</i> , <i>Mühlig</i> .....	144
<i>Heliothis scutosa</i> , <i>W. V.</i> .....	280
<i>Pædisca rufimistrana</i> , <i>H.-Sch.</i> .....	187
<i>Tinea angustipennis</i> , <i>H.-Sch.</i> .....	143
<i>Zelleria fusca</i> (sp. n.), <i>Stainton</i> .....	1

## REVIEWS.

<i>Monographia Lygæidarum Hungariæ</i> : Dr. Horváth ... ..	18
<i>Die Neuropteren Europas</i> : F. Brauer ... ..	44
<i>Eighth Annual Report on the Noxious Insects of Missouri</i> : C. V. Riley ..	94
<i>Proceedings of the Natural History Society of Glasgow</i> , vol. ii, pt. 2 ...	95
<i>Monograph of the Geometrid moths of the United States</i> : A. S. Packard ..	115
<i>The Butterflies of North America</i> , (2) pts. 4 and 5: W. H. Edwards ...	168
<i>Monograph of the British Aphides</i> , vol. i: G. B. Buckton ... ..	238
<i>Zoological Classification</i> : F. P. Pascoe ... ..	258
<i>The Transactions of the Entomological Society of London</i> , 1876 ... ..	259

## OBITUARY.

Edward Newman ... ..	45
Trove Blackmore ... ..	116
Edwin Brown ... ..	116

## WOOD-CUTS.

Base of wings of <i>Vanessa Io</i> ... ..	169
<i>Stauropus fagi</i> , Young larva of ... ..	232

## ERRATA.

Page 12, line 2 from bottom, for "returning," read "retiring."	
" 41, " 4 " " for "this" read "his."	
" 87, lines 9 and 14 from bottom, for "compressum," read "compressa."	
" 133, line 9 from top, for "polyodon," read "polyodon."	
" " 11 " " for "renicolor," read "unicolor."	
" 169, Explanation of Fig. A, for (P) read (I).	
" 189, line 19 from top, for "last" read "lost."	
" 198, " 32 " " for "says:" read "lays."	
" 205, " 6 " " for "ANGOLA," read "DELAGOIA BAY."	
" " 7 " " add "DELAGOIA BAY AND" between "FROM" and "ZANZIBAR."	
" 211, " 5 " " dele "not."	
" 216, " 3 " bottom, for "Mimetra," read "Minetra."	

THE

# Entomologist's Monthly Magazine

---

VOLUME XIII.

---

ON A NEW SPECIES OF THE GENUS *ZELLERIA*.

BY H. T. STANTON, F.R.S.

Since the 29th November, 1873, when Mr. Barrett brought to me for determination a *Zelleria* from Paisley, which I could not recognise, I have had this insect on my mind.

That which has so long perplexed me, ought now to take its turn in puzzling others, and I therefore here give to the world all that I know on the subject.

On the 9th December, 1875, I made the following entry :

*ZELLERIA FUSCA*, *n. sp.* Exp. al. 6-7 lines.

Having seen simultaneously eleven specimens, nine of which I return this day to Sir Thomas Moncreiffe, I may thus describe it :

Allied to *Z. insignipennella*, but wants the rich reddish-ochreous tint of that species ; variable in colour from greyish-ochreous to dark fuscous : sometimes with a dark spot on the fold beyond the middle.

Tuft of the head ochreous or fuscous.

It will be seen from the above, that its characters are rather negative than positive ; and, when one reflects that some Entomologists to this day doubt whether *Z. insignipennella* be specifically distinct from *Z. hepariella* (through the kindness of Mr. Sang, of Darlington, I have in my collection a pair taken *in cop.* at Castle Eden Dene, September 27th 1866, of which the ♂ appears to be *Z. hepariella*, and the ♀ *Z. insignipennella*), one feels one is treading on very uncertain ground—since colouring only, as distinctive of a species with a high Northern range, we know from many analogous cases to be a veritable *ignis fatuus*.

I will now endeavour to supply, as far as I can, from the letters before me, a history of the known specimens of this new species of *Zelleria*.

In March, 1874, I received from Sir Thomas Moncreiffe some insects for determination, amongst which I found two specimens of the *Zelleria*, which I had first seen the previous November from Paisley. I wrote at once for information respecting them, and was speedily favoured with the following reply to my queries :

“Moncreiffe House, Bridge of Earne,

“*March 31st*, 1874.

“The two specimens of the new *Zelleria* which I captured here were taken “April 8th and May 22nd, 1873.

“The first was beat off a thorn tree in my shrubbery ; the second I took on a “rocky face about 450 feet above the sea level, where no yew trees grow within a “a mile. There is, however, a very mixed vegetation in the locality, including ash, “but not privet. Both specimens were taken in the day-time. I hear that the “Paisley specimen was taken in that neighbourhood, in December.”

A year later I heard again of this insect :

“Moncreiffe House, Bridge of Earne,

“*April 17th*, 1875.

“I have lately taken two of the *Zelleria*, one beaten from willow, the other off “willow ; this latter specimen is a female, but I did not recognise it as this insect “till after I had killed it, being different in appearance from any I had already “taken. On consideration, I find that all that have been captured here were beat “out of bushes in the neighbourhood of willows, and as the willow is not very “plentiful with me, I have a notion that it may be the food-plant.”

In the course of the summer of 1875, Sir Thomas Moncreiffe brought up to London several specimens of this new *Zelleria* for examination, and wrote about them as follows :

“Moncreiffe House, Bridge of Earne,

“*July 21st*, 1875.

“The two ticketed specimens were taken by myself, in the spring. The others “were captured by Mr. Herd, at this place, from September till May, and he told “me the other day that he had taken two more the beginning of this month, or end “of June, beaten out of willow.

“My darker specimen was beaten out of yew, with willow and willow adjacent, “and the lighter coloured specimen was beaten out of willow. If all are the same “insect, the dates of capture are curious. The last week in June or first week in “July can scarcely be the dates for hibernated specimens.

I now leave the matter in the hands of other observers, in the hope that before long the entire history of the species may be known.

Mountsfield, Lewisham, S.E. :

*May 16th*, 1876.

SUPPLEMENTARY NOTES ON THE LARVA, &c., OF *APATURA IRIS*.

BY W. BUCKLER.

In the 4th volume of this Magazine, at pages 85 to 87, is a description of the full-grown larva of this species, which I now propose to supplement with a further account *ab ovo*.

For the eggs, I have been indebted to the kindness of Mr. W. H. Harwood, of Colchester, and Mr. E. F. Bisshopp, of Ipswich, viz., a single egg from the former, received the 31st of last July, laid within the three or four previous days on the upper-side of a leaf of *Salix caprea*; and from the last named on the 1st of August, four eggs, laid July 29th on pieces of paper.

The egg, as may be supposed, is of a good size, its shape cylindrical, of about equal height and diameter, adhesively fixed in an upright position on its flat base, domed on the top, its surface strongly ribbed, the ribs varying in number from twelve to fourteen. All the eggs were alike in colour when I first received them, viz., of a yellowish olive-green, having near the base a zone of purplish-black, the green portion semi-translucent, the surface glistening; those laid on the paper began to change on the 4th of August, by displacement of the black zone and the appearance of a blackish spot within the centre; on the 5th, the whole top grew at first cloudy, then blackish, the lower part paler green than before, this, on the 6th, became still paler, and the ribs whitish, and on that day, about 7 o'clock in the evening, three eggs hatched, and the fourth at 10 o'clock. The egg from Colchester hatched three days later, after previously passing through similar changes.

When just hatched, the larva has a large rounded head, and two distinctly separated anal points; its colour light dirty greenish-yellow, with three faintly darker lines down the back, the head dark chocolate-brown.

The next day after hatching, each larva was resting on the tip of a leaf; each leaf thus tenanted showed that, at a little distance below the larva, a small portion had been eaten from its edge on one side, *quite through the whole substance*; the larvæ were now just one-eighth of an inch long, and on their rough granulous heads could be seen, with the aid of a lens, two large, somewhat bright, oval, smooth patches of paler colour, each with a central dark spot occupying the crown of the lobes, the body light yellowish-green, faintly showing a darker dorsal line and slanting side streaks.

I found the Colchester larva, when but five days old, lying dead where it had been feeding on the edge of a leaf, the cause of this mishap betrayed by the state of the food, which could not be changed the day before without risk, as three of the larvæ just a week old were fixed for moulting, each on a coating of silk, spun either on the glass cylinder, or on the side or tip of a sallow leaf; the other larva, not previously visible for a day or two, now made its appearance again, having already completed its first moult, furnished with remarkably long and stout horns, cleft at the dark reddish tips; this I noted as No. 1, a very lively and active little creature, roaming over the sallow leaves for an hour or two after its removal from the rest before establishing its footing on a leaf point.

On the tenth day, No. 2 on the cylinder, moulted; on the twelfth day, No. 3 on a leaf tip, had also moulted, both furnished with horns like No. 1. The remaining larva moulted on the thirteenth day, but without horns, the head being much the same as before, though the colouring of the body was changed like the others, viz., to a bright green, with yellowish sub-dorsal stripes on the six anterior segments, and yellow slanting lines along the sides, the points of the tail brought close together appearing very like one anal point, ringed with red; this hornless larva fed and seemed very lively and well up to the twenty-first day, when it spun a layer of silk on a leaf, on which it remained quietly for a couple of days, then at intervals struggling and contorting itself during two more, and, in course of the day following, it died with its front segments rigidly curved backward.

From the end of August my attention was devoted to the three survivors, of which No. 1 had moulted a second time on August 21st, a third time on the 28th, and a fourth time on September 5th, when it was a little over one inch in length; on the 11th, it fixed itself for its fifth moult on silk spun upon the glass cylinder, and measured then one and three-eighths of an inch in length; by the 21st, it had attained its greatest length of two inches, and was stout in proportion. From this date, although continuing to feed well, it appeared to be getting shorter by slow degrees, and the few scattered purplish-black points as usual appeared, and, by the 25th, had greatly increased, forming dark blotches on the back of the tenth, eleventh, and twelfth segments, the green general ground colour becoming paler; in the afternoon of this day, it left its favourite silk carpeted leaf, where latterly it always returned to rest after every meal made on other leaves, and took up a position on a stem, head downwards, the head and front segments hanging free, but in half-an-hour it removed to another stem where, in

a similar posture it remained for about the same space of time, but here, as previously, it seemed incommoded by too close proximity with other stems and leaves, for it again moved off and ascended to one of the upper leaves and crept beneath it, and there, after resting a few minutes, it began to spin a coating of silk, leisurely adding to it at intervals during the evening, and probably during the night, as I noticed next morning some stout threads had been spun from the footstalk of the leaf to the main stem, firmly securing the position of one to the other; the larva now remained quite still, its head and horns in line with the body towards the stem, and its tail a little way from the tip of the leaf, the back much arched, the anal pair of legs securely fixed in a pad of silk, and the first ventral pair clinging to the silken carpet which they dragged off a little from the leaf at the point of contact; the assimilation in colour to the under-side of a willow leaf was very perfect.

Larva No. 2 completed its third moult on September 5th, then, seven-eighths of an inch long; after this, it was kept apart, feeding well, and attaining the length of about two inches by the 25th of the month; and on the 28th, had spun its carpet under a leaf, and secured itself similarly to the preceding.

Larva No. 3 moulted a second time on the 3rd of September, when its length was just half an inch; from this time it fed very sparingly, often changing its position as its food was changed, until the 25th of the month, when I found it was hibernating on the stem of a twig, the hinder half of its body enveloped in a mass of silk where it remained immovable; only by very gently touching its horns occasionally, as winter advanced, could I be sure it was alive.

Beyond keeping them in a room of which the window was closed only at night, I was unconscious of any thing I had done to stimulate premature development of the two larvæ which so rapidly attained full growth: certainly I attended to them carefully, and watched them with much interest, especially while feeding, an operation I noticed performed oftener by night than by day.

After moulting, the green colour of the larva was at first very pale, like the under-side of a willow leaf, for a day or two, for which period it would remain on the under-side of a leaf, until its green colour had become brighter and darker, when it would again rest on the upper surface of the leaf; after the last moult, and sometimes before, each larva had a special leaf spun over the upper surface with silk, on which it rested in such a position that its head was facing the footstalk, and

bent down, so as almost to touch the leaf, the anterior legs drawn in close to the body; sometimes all the ventral legs, and sometimes only the third and fourth pair in addition to the anal pair, had a footing on the silk; when hungry, the larva would quit this, make a rapid meal, and return again to rest. Some leaves were so ravaged that only the midribs were left. Once I was rather surprised to see the second larva eat off a large strip from one side of its silk covered resting leaf, together with the silk on it, but leave the rest untouched.

Towards the end of September, a week of suddenly severe cold weather killed my two large larvæ just as they seemed about to pupate, and, unluckily, before I could remove them to a hothouse; and, before the year had ended, the third smaller larva, of which I had great hopes as being in a more natural state of hibernation, died also.

Emsworth: April 3rd, 1876.

---

## DESCRIPTIONS OF HITHERTO UNCHARACTERIZED PHYTOPHAGA.

BY JOSEPH S. BALY, M.D., F.L.S.

(continued from Vol. xii, page 75.)

### Fam. CRIOCERIDÆ.

#### LEMA EMARGINATA.

*Oblonga, convexa, flava, nitida; ore, antennis, articulo basali excepto, pectore, abdominis basi et maculis, pedibusque nigris, femoribus tibiisque (basi et apice exceptis) flavis; thorace transverso, lateribus medio valde constrictis, ante apicem lateraliter productis; scutello apice emarginato: elytris profunde punctato-striatis, punctis ad apicem minus fortiter impressis; femoribus posticis modice incrassatis, muticis. Long. 3¼ lin.*

Hab.: Cape of Good Hope; a single specimen.

Head smooth, impunctate, neck moderately constricted, front impressed on either side with an oblique groove; clypeus triangular, bordered on the sides by a deep groove; its lower half, together with the parts of the mouth, black; its surface sparingly clothed with sub-erect whitish hairs; antennæ robust, rather less than half the body in length, basal joints short, sub-globose, fulvous, its apex piceous, second very short, third and fourth equal, each one-half longer than the second, the remaining joints thickened, cylindrical, closely clothed with adpressed hairs. Thorax nearly one-fourth broader than long, sides deeply excavated in the middle, produced laterally in front, the produced portion obtuse; upper surface distinctly flattened on the disc, transversely sulcate in front of the base, the sulcation faint, ill-defined, impressed in the centre with a large fovea, surface smooth and shining, impressed in the middle with a broad longitudinal row of punctures; on

either side of the disc, just behind the anterior border, is a large shallow excavation. Scutellum sub-quadrate, its apex broadly emarginate. Elytra much broader than the thorax, punctate-striate, the punctures large, rotundate, deeply impressed. Hinder thighs distinctly thickened, unarmed. Abdomen shining, very sparingly clothed with short adpressed hairs, fulvous; nearly the whole of the basal segment, a small spot on either side of each of the three following segments, and a transverse stripe on the apical segment, black.

This species must be placed near *L. robusta*, Lac.

#### LEMA TRANSVERSO-NOTATA.

*Sub-elongata, parallela, nigra, nitida; abdominis limbo, capite (antennis exceptis), thorace elytrisq. rufo-fulvis, his regulariter punctato-striatis, utrinque punctis duobus parvis, prope medium transversim positis, nigris.*

*Long. 3½–4 lin.*

Hab.: Guinea, Camaroons.

Vertex smooth, impunctate, neck constricted, front bordered on either side by the usual oblique groove, its surface thickened, impressed at its upper end with a deep fovea; inner orbit of the eye coarsely punctured; antennæ with the two lower joints rufo-fulvous, the rest black, with a faint steel-blue reflection, basal joints moderately thickened, the second short, ovate, the third and fourth equal, each twice the length of the second. Thorax sub-quadrate, sub-cylindrical, slightly flattened above; sides broadly and deeply constricted in the middle; upper surface smooth, impunctate, transversely sulcate just in front of the basal margin. Elytra much broader at the base than the thorax, sides parallel in front, their apex broadly rounded; above convex, very faintly transversely depressed; finely punctate-striate below the basilar space, the interspaces plane, impunctate; each elytron with two small roundish black spots placed transversely just before the middle of the disc, the first occupying the space between the fifth and sixth striæ, the other situated near the outer border.

#### LEMA HAROLDI.

*Oblonga, sub-cylindrica, rufo-fulva, nitida; pleuris, antennis (articulo basali excepto), pedibusque nigris, femoribus posticis subtus rufo-piceis; thorace sub-quadrate, sub-remote punctato, lateribus medio modice constrictis; elytris infra basin transversim depressis, basi distincte ad apicem tenuiter punctato-striatis, interspatiis planis, lævibus.*

*Long. 4 lin.*

Hab.: Guinea, Camaroons.

Vertex smooth, impunctate, neck constricted; front obliquely sulcate on either side, impressed in the centre with an oblong fovea, clypeus triangular, bounded on either side by a deep groove, remotely punctured, sparingly clothed with adpressed fulvous hairs; orbit of eyes coarsely punctured, clothed with similar hairs. Antennæ half the length of the body, basal joints sub-globose, stained with piceous.



second short, third and fourth equal, each about one-half longer than the second, first joints obscure rufo-piceous, the two following also stained with piceous. Thorax sub-quadrate, slightly broader at the base, sides moderately constricted in the middle, rounded and converging at the apex; above sub-cylindrical, finely and sub-remotely punctured, the inner whole surface between the larger punctures, when viewed under a lens, is seen to be very minutely punctured. Scutellum oblong, narrowed from base to apex, the latter rounded. Elytra much broader than the thorax, sides parallel, the apex broadly rounded; above convex, transversely depressed below the basilar space, regularly punctate-striate, the punctures strongly impressed on the anterior half, much less so below the middle; interspaces plane. Hinder thighs unarmed.

This species, together with the preceding, ought to be placed close to *L. mitis*, Clark.

#### LEMA SAUNDERSI.

*Sub-elongata, læte fulva, nidida; antennis, pectore, abdomine, pedibusque nigris, femoribus (apice maculâque dorsali exceptis) fulvis; elytris leviter rugulosis, regulariter punctato-striatis, obscure metallico-viridibus aut cæruleis, limbo laterali vittâque sub-suturali, apice conjunctis, fulvis.*

*Long. 4-5 lin.*

Hab.: Brazil (Rogers); two specimens, formerly in the collection of Mr. W. W. Saunders, after whom I have named this species.

Vertex smooth, impunctate; neck moderately constricted; front impressed on either side by an oblique groove; antennæ slender, the basal joints sub-globose, fulvous, stained above with piceous, second joint short, third twice the length of the second. Thorax slightly broader than long, sub-cylindrical, flattened above, sides deeply constricted in the middle; disc smooth and shining, a longitudinal stripe down the middle, together with a space on either side just behind the anterior angle, impressed with distinct punctures; on the medial line at some distance in front of the basal margin is a faint transverse depression, in the middle of which is placed a single deep fovea. Scutellum trigonate, its apex obtuse, and stained with nigro-piceous. Elytra much broader than the thorax, oblong, slightly dilated towards the apex, the latter broadly rounded; above convex, finely punctate-striate, the striae towards the apex nearly obsolete; general surface finely and rugosely strigose.

Nearly allied in size, form, and sculpturing to *L. apicalis*, Lac., but differing entirely in the pattern of its elytra.

#### LEMA BUCKLEYI.

*Elongata, sub-cylindrica, pallide fulva; nitida, capite, pectore, tibiis tarsisque nigris, antennis fuscis, articulo primo piceo, ultimis duobus sordide albidis, femoribus piceo tinctis; elytris regulariter punctato-striatis, viridi-metallicis, fasciâ latâ prope medium apiceque fulvis.*

*Long. 3½-4 lin.*

Hab. : Ecuador ; collected by Mr. Buckley.

Neck constricted, shining, impunctate, its extreme base fulvous ; front impressed on either side by a deep oblique groove, its apex also impressed with a short longitudinal line ; clypeus sparingly clothed with sub-erect hairs ; antennæ two-thirds the length of the body, slender, basal joints thickened, sub-globose, second very short, the third three times the length of the second, the fourth longer than the third ; the first joint piceous, the second to the ninth fuscous, obscure fulvous beneath, the tenth and eleventh yellowish-white. Thorax slightly longer than broad, sub-cylindrical, sides deeply constricted in the middle ; above transversely sulcate in front of the base, the sulcation broad, shallow, and ill-defined, a longitudinal space down the middle and another on either side just behind the anterior angle, finely but distinctly punctured. Scutellum black, oblong, its apex obtuse. Elytra broader than the thorax, sides parallel at the base, slightly dilated below the middle, the apex sub-acutely rounded, above convex, faintly excavated on either side near the suture, just below the basilar space ; humeral callus prominent ; surface regularly punctate-striate, the ninth stria from the suture entire ; interspaces plane, slightly convex towards the apex and on the sides.

#### LEMA RUFO-LIMBATA.

*Robusta, rufo-picea, nitida ; tarsi, tibiis anticis quatuor apice, antennisque (articulo primo fulvo excepto), nigro-piceis ; elytris regulariter punctato-striatis, striâ nonâ medio vix interruptâ, flavis, utrinque (basî exceptâ) rufo-limbatis.*

*Long. 3½ lin.*

Hab. : Parana.

Vertex finely but distinctly punctured ; front with the usual oblique groove on either side, inner orbits of eyes coarsely punctured ; clypeus triangular, coarsely but remotely punctured, sparingly clothed with sub-erect hairs ; antennæ robust, rather longer than the head and thorax ; basal joints sub-globose, the second very short. Thorax rather broader than long, sub-cylindrical, sides deeply constricted in the middle ; upper surface transversely grooved in front of the basal margin, the sulcation faintly wrinkled ; a longitudinal line on the middle of the disc and a space on either side just behind the anterior angle distinctly punctured, the basal margin indistinctly edged with rufous. Scutellum triangular, its apex truncate. Elytra much broader than the thorax, sub-quadrate oblong, convex, slightly flattened along the suture, not depressed below the basilar space, punctate-striate, the ninth stria from the suture slightly interrupted in its middle third, the punctures being there placed at irregular intervals ; interspaces plane, moderate convex near the apex ; each elytron with its entire margin (the middle of the basal border excepted) edged with bright rufous, the rufous border is nearly uniform in width during its whole extent, with the exception of the apex of each elytron, where it is dilated, and forms a triangular apical patch.

#### LEMA ARIADNE.

*Sub-clongata, rufo-fulva, nitida, antennis pedibusque nigris ; elytris*

*metallico-cæruleis, infra basin transversim excavatis, sat fortiter punctato-striatis, punctis ad apicem minus fortiter impressis, strid nonnō medio interruptā; interspatiis planis, ad apicem et ad latera vix convexis.*

*Var. A—Elytris basi maculā rufo-fulvā notatis.*

*B—Pectore abdomine nigris.*

*Long. 3½ lin.*

*Hab.:* Para, Santarem.

Vertex smooth, impunctate, impressed in the middle with a longitudinal fovea, bounded on either side by an oblique groove, its surface (seen under a lens) minutely but not closely punctured, sparingly clothed with short, fine hairs; clypeus impressed with a few deep punctures, clothed, as well as the inner orbit of the eyes, with hairs coarser than those on the front; antennæ two-thirds the length of the body, slender, basal joints incrassate, broadly ovate, second short, sub-ovate, third and fourth nearly equal, each about twice the length of the second, basal joints more or less stained with rufo-piceous. Thorax rather broader than long, sub-cylindrical, sides deeply constricted in the middle, upper surface transversely sulcate in front of the basal margin, the sulcation ill-defined, impressed in the middle with a single deep fovea; a longitudinal space occupying the middle of the disc, together with a patch on either side, just behind the anterior angle, distinctly punctured. Scutellum trigonate, its apex obtuse. Elytra much broader than the thorax, sides parallel; above convex, rather deeply excavated below the basilar space; the humeral callus prominent; surface rather strongly punctate-striate, the punctures finer and less deeply impressed posteriorly; interspaces plane, scarcely thickened towards the apex; on each elytron near its apex is a large shallow excavation. Body beneath clothed with short silky hairs.

(To be continued.)

*The vernal broods of white butterflies in the Isle of Man.*—A few remarks by Mr. Stainton in the E. M. M. for June, 1875, No. 133, p. 13, on the prior appearance of *Pieris rapæ* or *napi*, caused me to watch for, and capture, the first white butterflies which I saw on the wing here this spring. I did not see a specimen until April 13th, when I captured both *rapæ* and *napi*.

I had a number of pupæ of *P. rapæ* collected in March—the first of these emerged April 11th—but, having been kept in a conservatory, they would probably be slightly forced. It would thus appear that, in the Isle of Man, *rapæ* and *napi* appear simultaneously.

On the cliffs, where my walks have mostly been, *napi* is much the more abundant species. *Pieris brassicae* made its first appearance April 24th. I have not yet seen *Anthocaris cardamines*.—EDWIN BIRCHALL, Derby Square, Douglas, Isle of Man: May 12th, 1876.

*The supposed new British species of Leucania.*—I am sorry to say my supposed *Leucania* (vide vol. xii, p. 279) turns out to be a variety of *Nonagria lutosæ*. I am indebted for this information to Dr. Staudinger of Dresden, who informs me the

aberration is occasionally met with on the continent. I can find no English specimen resembling mine.—BATTERSHELL GILL, M.D., 9, Cambridge Terrace, Regent's Park : 3rd May, 1876.

*Food-plant of Agrotis agathina.*—It may be remembered that I tried, through the pages of this journal, to obtain information touching the rearing of this beautiful moth. One collector in Yorkshire possesses the secret, but refuses to impart the same unless for money. Mr. Tugwell, of Greenwich, on the contrary, kindly informs me he feeds the larvæ on *Erica tetralix*, and succeeds in rearing the moth. This morning I took my sweeping-net into a low pine wood, with a carpeting of *Calluna vulgaris* and *Erica cinerea*. I soon filled my boxes with innumerable larvæ of *Agrotis porphyrea*, and many *A. agathina*, the latter being still mostly very small. I noticed, however, what may turn out to be valuable, and indeed the real secret of success in raising *agathina*, viz., that where the *Calluna* grew by itself, I found few or no *agathina* larvæ, but where *E. cinerea* occurred in large patches, I found them very frequent, sometimes as many as seven or eight being found at once in the net. Bearing this in mind, I intend, when the larvæ are full-grown in the end of May, to feed them exclusively on *Erica cinerea* and *tetralix*, and have great hopes of success.—G. NORMAN, Clunty Hill, Forres : 4th April, 1876.

*Description of the larva, &c., of Anarta melanopa.*—For eggs of this, and of the following species also, I am indebted to the kindness of Mr. J. T. Carrington, who sent them to me from Perthshire.

I received the eggs on June 4th, 1875; the larvæ hatched on the 10th; they soon began to feed on tender leaves of *Arbutus unedo*, or *Luzula pilosa*, sallow, flowers of *Helianthemum vulgare*, and on *Vaccinium vitis-idaea*, and by the 16th were growing and thriving well. By July 3rd they were three-quarters of an inch long, and feeding only on sallow, *Salix caprea* and *S. acuminata*, having gradually deserted the other food-plants supplied to them; those that now survived, some two or three only, continued to feed till after the middle of the month, and about the end of the third week in July turned to pupæ, one of them, without having attempted a cocoon, became a bare pupa on the surface of the soil; but as another entered the earth, and apparently formed a cocoon, we may suppose the latter would be the habit in a state of nature.

The egg is almost globular, the shell delicate, shining, with rather more than fifty ribs, the transverse reticulation shallow, the top a little puckered; colour when received, a delicate pink.

The newly-hatched larva with sixteen legs, but the ventral pair on seventh not serviceable, and those on eighth smaller than those on ninth and tenth; the usual warts small in size, and all placed on little eminences, and furnished with longish pale bristles; the colour semi-translucent whitish, but the back purplish, and the head pale brown, the warts black.

In about a week, the legs on the 8th became nearly as much developed as those on the ninth and tenth, and those on the 7th increased in size; the whole body greenish, the back became brownish with pale central stripe, also a wider pale subdorsal stripe with a brownish thread through it. In about another fortnight the length attained was three-quarters of an inch, the figure of the usual *Noctua* type,

tapering a little forwards from the 5th, and the 13th sloping rapidly; the skin soft and velvety; the ground colour deep purplish-pink, dorsal line ochreous-brown boldly outlined with blackish, but interrupted on the fore-part of each segment by a reddish-brown triangular mark; this triangle is met on either side by a thick black wedge-shaped mark, below which again comes the continuous bright yellowish-white sub-dorsal line; this line is thin on the thoracic segments, but beyond them widens in such a manner that the widest part of it on each segment is near the end of the above-mentioned black wedges, and the whole line is finely edged with black throughout; the side is similar in colour to the back, but very much obscured by dark reddish-brown freckles, and with a short blackish streak slanting downwards on each segment; the spiracles oval and blackish; the sub-spiracular stripe yellowish white suffused beneath each spiracle with red, and delicately freckled with red along the middle; the belly and legs dark purplish-brown, the head also of this colour, with darker reticulations.

After the final moult, the length became about seven-eighths of an inch, with the colouring much as before, except that the sub-dorsal line had become thinner, only just visible on the thoracic segments, and on the others much attenuated at each end, but still continuous. In about ten days from the final moult, the full length was attained of somewhat over one inch and a quarter, the figure being slender for a *Noctua*; the ventral legs now all of one size; the bulk uniform: in general effect the appearance was less dark than before, though the details still remained the same, only the pale sub-spiracular stripe had become still more obscured by red and brown freckles; the tubercular dots of the back not noticeable, being situate within the black wedges: the spiracles now ochreous-brown finely outlined with black, and each placed on an unfreckled spot of the paler ground colour; the belly mulberry colour; the whole surface velvety, except the head, which is hard and shining, and of a reddish-brown colour with darker reticulation, and a blackish streak down the front of each lobe.

The pupa, which lies exposed, is rather more than half an inch in length, smooth and rounded in figure, with the abdomen tapering off rather quickly, and ending in a blunt spine; very glossy, and in colour black, the segmental divisions being at first reddish.—J. HELLINS, Exeter: *February*, 1876.

*Description of the larva, &c., of Anarta cordigera.*—The eggs which I received from Mr. Carrington on June 8th, 1875, were laid on June 1st, and the larvæ hatched on the 12th; meanwhile I had received from Mr. Buckler another supply of eggs, or rather newly-hatched larvæ, on the 10th, which had been sent him by Dr. F. Buchanan White. The young larvæ ate at first *Luzula pilosa*, *Arbutus unedo*, and *Arbutus uva-ursi*, the last kindly supplied by Dr. White; but after a time they were quite content with young leaves of *A. unedo*, and preferred them to those of *A. uva-ursi*, although I had been at the trouble of obtaining a fine growing plant from Messrs. Veitch, of Chelsea, in order to give them fresh tender leaves.

Both broods of larvæ grew and kept pace with those of *melanopa*, by July 3rd having become nearly three-quarters of an inch long, and by the 16th being full-fed, and returning to earth about the 23rd.

The egg is about the size of that of *melanopa*, but not so globular; with about

forty shallow ribs, and with faint transverse reticulations; the shell shining; the colour when laid cream white; in a week becoming whitish with a faint reddish irregular ring and blotches.

The newly-hatched larva is of the same size as *melanopa*, but darker in colour, being pale dull purplish, with the head, collar, and anal plate shining blackish, the warts also blackish, distinct, and furnished with very short bristles, the ventral legs on the seventh and eighth small, and not useable. In about a week, the colour changed to pale greenish, except the back, which was brownish, with pale dorsal and sub-dorsal stripes, the head and warts still remaining blackish.

At the end of the third week from hatching, the larvæ were nearly three-quarters of an inch long, and all the ventral legs were used, those on the seventh and eighth, however, being still smaller than the others; the colour was now deep purplish-brown both above and below, with a white dorsal line, and a faint indication of a sub-dorsal line, but only on the second and thirteenth, the sub-spiracular stripe pale primrose-yellow; the whole skin soft and velvety; the head horny. In another week, and after the final moult, the length was nearly an inch; the purple-brown of the back now obscured by black, and on the sides freckled both with black and with paler brown; the dorsal whitish line thinner than before, and sometimes interrupted at the divisions by the ground colour, the sub-dorsal, though faint, now showing slightly all its course; the sub-spiracular stripe becomes brownish-ochreous and freckled with crimson-brown, the belly and legs dark purplish-brown; the head dark purplish-brown, with a blackish blotch on the corner of each lobe, hard and shining. At the end of the fifth week from hatching, the full length was attained of one inch and three-sixteenths; the figure slender for a *Noctua*; all the ventral legs about the same size; in the colouring there were two varieties at least, and perhaps, in a larger number of examples, more variation might have been observed; the lighter variety had the ground colour crimson-brown, all the details much as before, both the pale and the black freckles being more distinct; the darker variety became almost black, and had only a trace on the end of each segment of the dorsal and sub-dorsal lines; the sub-spiracular stripe was brown, and tinged with deep lurid red; the belly sooty-brown.

All the survivors of both broods, some four or five in number, spun up in long rounded earthen cocoons on the surface of the soil.

As a postscript to this and the preceding note, I would say, that from the information I have received from my friends, the natural food of *A. cordigera* must be *Arbutus uva-ursi*, and that of *A. melanopa* probably *Menziesia cærulea*, but of this I am not sure; of course *Arbutus unedo* and *Salix capræa* are only substitute foods.—ID.

*Description of the larva of Acidalia emarginata.*—I have several times had the eggs of *Acidalia emarginata*, but it was not until last year that I succeeded in rearing the larvæ to maturity, the specimens being the result of a batch of eggs received from Mr. F. D. Wheeler, of Norwich, on the 29th July, 1874. The eggs are oblong-oval, and, when fresh, are orange colour, but, before hatching, change to purplish-red; this event took place the day following their arrival. The newly-emerged larva is olive-green, with wainscot-brown head. Being supplied with *Polygonum aviculare*,

they fed and grew slowly until hibernation, which portion of their existence extended over a long period, as they ceased feeding in the autumn, and did not re-commence until early in May following. By the middle of June, they were full-grown, and may be described as follows:—Length about three-quarters of an inch, and of average bulk in proportion; head about the same width as the second segment; it has the face rather flat, but the lobes rounded, and is notched on the crown. When viewed from above, the body seems flat, but seen from the side, the under surface is rounded; the 9th segment is the widest, and from it the rest gradually taper towards the head; the 10th, 11th, 12th, and 13th, are of about equal width: all these overlap considerably, thus rendering the divisions very distinct; this overlapping, too, makes the skin at the side appear as a conspicuous lateral ridge. The skin is tough, and has a rough appearance, owing to its being transversely ribbed throughout.

The ground colour is dirty ochreous, in some specimens strongly suffused with a dingy smoke colour; the head is of the same colour, and from it extends a pale dorsal line, this line being bordered, on each side of the 10th to 13th segments, with an irregular, broad, and very dark, stripe; on segments 2 to 5 these stripes are paler and narrower, whilst on segments 6, 7, 8, and 9, they become conspicuous black X-like marks; the side of the lateral ridges is tinged with reddish-ochreous, and there are various brown freckles between this and the dorsal line. The ventral surface is of the same tint as the ground of the dorsal surface, and is freckled with brown.

The larvæ began to spin loose cocoons, in the corners at the bottom of the cage, on the 21st June. The pupa is about three-eighths of an inch long, smooth and shining; the colour reddish-yellow, with the wing-cases greenish.

The first imago appeared on the 15th July, and was speedily followed by the remainder.—GEO. T. PORRITT, Huddersfield: May 3rd, 1876.

*Natural History of Crambus tristellus.*—On the 28th August, 1874, Mr. W. Robinson-Douglas kindly sent me a small batch of eggs of this species loose in a quill, which were the more welcome from the fact of my having obtained a batch the year before, but with no satisfactory result beyond learning something of the voracity of the larvæ, for whilst young they entirely killed a large pot of grass before the following spring, and when I looked for them had all escaped in quest of fresh pasture.

In order to prevent a similar failure, I this time provided several large pots of *Aira flexuosa* and *cæspitosa*, among which the newly-hatched larvæ were distributed on the 12th, 13th, and 14th September, and, beyond a little attention to the grass by occasional watering, they were not disturbed until April, 1875, when I began to search the remains of the grasses for the larvæ. Amongst the *A. cæspitosa* none could be found, only a number of quite small empty galleries, which had been abandoned at an early period, with but little damage to this grass, a proof of its unsuitability. Two pots of *A. flexuosa* had been so ravaged as to be destroyed, the lower parts of the dead grass had a number of silken cases or galleries, both little and big, spun amongst it and covered with frass, but no larva remained, and although several vigorous plants of *Luzula multiflora* were by chance still growing amidst the dead *A. flexuosa*, they had not kept the larvæ from wandering away, nor had they been eaten at all.

The third and largest pot of *A. flexuosa*, though greatly ravaged, still had a little of the grass alive, and here, amongst a great number of the silken galleries, I was glad to find four tenanted; one gallery was covered with dry frass, the other three partially protected externally with small particles of moss, some of which was growing in patches at the base of the grass; each was spun amongst the grass in a vertical position, the lower end rather over half an inch from the earth; the length of these galleries varied from three-quarters of an inch to one inch and a quarter; their shape a little inclining to fusiform, but yet rather irregular in figure, made of strong grey silk, and very smooth within. When removed to a fresh pot of *flexuosa* these larvæ fed well for a time, but early in June they deserted these dwellings and constructed little silken lined tunnels in the light soil amongst the upper parts of the grass roots, and therein, during July, they pupated. The moths appeared from August 1st to 11th.

The egg of *tristellus*—which, as far as the experience of these two batches enables me to speak, appears to be deposited free, and not attached by the moth to anything—is in size rather large for that of the moth, of a long elliptical shape, and ribbed longitudinally; when first laid, of a whitish straw colour, turning in about five days to buff, on the tenth day to light brown, from thence growing gradually to dark brown or dark red, and, within two days of hatching, to a dingy purplish tint. In this instance, the hatching continued at intervals from the sixteenth to the nineteenth day.

When first hatched, the larva is less than the sixteenth of an inch long, of a dingy pink colour, with large black head and plate on the second segment. Not having examined them till the following spring, I can give no account of the intermediate moults, but, towards the end of April in the following year, I found the smallest larva to be three-eighths of an inch, two others about half an inch, and the largest three-quarters of an inch, in length; the ground colour of the smallest pale pinkish-grey, the next sizes more strongly tinged with pink, and the largest a darker reddish-grey, the ground colour of each being paler on the hinder segments, and, by degrees, darker towards the head; the belly a little paler than the back. The conspicuous character of this genus—the dark shining spots—were, in the smallest example, lightish brown, and blackish-brown in the others; the anterior plate dingy brown in the smallest, and quite black in the largest, dorsally divided by a fine thread of greyish; the head of each was quite black, and the hinder plate of the ground colour. At the beginning of June, the larvæ, then full-grown, were all of about the same size, measuring three-quarters of an inch in length, and their skins changed to a light fawn colour and to light brown, and, as before, smooth without gloss, the head, plates, and spots only being glossy; the spots on the thoracic segments transversely oval and fusiform, on the back of the other segments the first pair transversely squarish-ovate, the second pair transversely linear; those along the sides longitudinally squarish-ovate; those situated behind and below the spiracles of the ground colour, but shining; the spiracles small, round, and black.

The pupa nearly half an inch in length, rather slender, with longish wing-covers, smooth and shining, of a light brown colour.—WILLIAM BUCKLER, Emsworth: April 3rd, 1876.

[The species of *Crambus* are generally looked upon as comparatively harmless insects, but, from the foregoing account, it is evident that *C. tristellus*, where it abounds, can be a destructive pest in grass lands.—Eds.]



*Early appearance of Catoptria aspidiscana and Elachista subnigrella.*—On the 6th inst., as it was fine and warm, I paid a visit to Grange, and took a female of *C. aspidiscana*. I had spent five hours without much result until 4 p.m., when, to my surprise, *Elachista subnigrella* turned up, and I succeeded in taking a score of specimens, but only one female among the lot. *Gracilaria auroguttella*, *Pancalia Leeuwenhoekella*, and a few *Lithocolletis*, made up my catch. Two days later, I again went prepared to fill some scores of boxes, but things had changed, and I had only four moths to set after spending a day and travelling seventy-two miles. A cold wind did all the mischief.—J. B. HODGKINSON, 15, Spring Bank, Preston: May 11th, 1876.

*Note on sugaring.*—In reply to Mr. Porritt, concerning my note on sugaring (Vol. xii, p. 207), I may state that the ivy was perfectly free from dew when I sugared it, and also, that no rain had fallen for some days previous. I may also state what I omitted to mention before, that I subsequently sugared several times, in the same manner and place, and invariably with the same result,—many insects at the sugar and very few at the ivy bloom. I do not think that sugaring has had the attention paid to it that it deserves. From accounts received from different quarters, ivy bloom does not seem to possess such great attraction for insects in Scotland, in some parts at least, but by making a series of trials of sugaring near ivy, next autumn, and, by noting down the results, I may obtain more decided evidence.—WM. SANDISON, Glasgow: 17th March, 1876.

*A strange hibernaculum.*—While examining our one church bell on March 28th, I was surprised to find, in the interior, eight specimens of *Gonoptera libatrix* and three of *Vanessa urtica*. The bell is never rung mouth upwards, but even in ordinary chiming one would have thought the vibration must be too great to make such a situation at all desirable as winter quarters.—H. JENNER FUST, Jun., Hill Court, Gloucestershire: April 3rd, 1876.

*Observations on the development, indoors, of hibernating pupæ of Lepidoptera.*—The often inexplicable death of pupæ, when hibernating in the house, induced me to make close observation of the matter, in order to ascertain the cause of the great mortality. The number of pupæ which I collected for this purpose, in the autumn of 1872, amounted to several hundreds, and included most of the genera of the *Macroptera*. I put them, bedded on moss, in a large receptacle in the room, and moistened them with water from time to time. Treated in this manner, only one-half of the pupæ produced perfect insects; the other half became diseased, so that the segments of the abdomen gradually became contracted, movement became impossible, and thus the death of the pupæ ensued. In some other species, such as *Smerinthus ocellatus*, in consequence of being too little moistened, the pupa-case had become so hardened that the moth could not break through it, and died inside, although fully developed. These results showed me that pupæ kept indoors must be kept damper, and in the following year I made a renewed attempt with a number of pupæ equal to that of the foregoing year. At the end of December I brought them from a cold into a warm room, and sprinkled them with water daily, whereupon *Papilio Machaon* and others, which only wanted a short time for their perfect development, were influenced

to make an early appearance; whereas a large portion of the *Bombycidæ* showed an aversion to direct contact with water, and an entirely negative result was demonstrated with this family.

On the other hand, the *Sphingidæ*, in consequence of the sprinkling, showed great vivacity, and therefore led me to expect the best success. I continued to moisten them, yet, after six weeks, most of them had lost their liveliness, and only about two-thirds became developed. When I examined the undeveloped pupæ, I found they were covered with a thin, chalky scale, caused by the water; the insect inside was pretty well formed, but dead. This chalky deposit on the pupæ had excluded the air, and caused their death.

From this experience with pupæ hibernating in rooms it follows, that—firstly, continuous moisture is necessary to the production of perfect insects; secondly, the moisture must not be brought into direct contact with the pupæ: in a state of nature many insects know how to protect themselves therefrom by spinning coverings, by forming cells in the earth, &c.

These facts gave me the idea of constructing the apparatus described below, which has proved to be so practically serviceable, that even species difficult to rear, such as *Doritis Apollo*, &c., have developed most perfectly. I had also the pleasure of seeing that under my new treatment none of the pupæ suffered from the evils above mentioned.

I believe that the description of my apparatus will do many breeders a service, especially as the simplicity of the contrivance permits it to be easily obtained; and I cannot sufficiently commend the practical value of it.

*Description.*—The base consists of a round plate of strong zinc, with two vertical rims, an inch high, placed one within the other an inch apart, and soldered to the basal plate so that the outer one is water-tight. The inner rim must be perforated with small holes as close to the bottom as possible. The space inside the inner rim must be filled with fine sand, on which the pupæ should be laid. The space between the two rims is then filled with water, which finding its way through the holes in the inner rim to the sand, causes the necessary moisture. Over the whole is put a bell-shaped cover of wire-gauze which must fit tightly over the outer rim. In this receptacle the pupæ remain untouched, and receive fresh moisture, as above indicated, if required by the drying of the sand.—H. BACKHAUS, Leipsic. (Translated from the Stettiner entomologische Zeitung, xxxvii, 192, 1876).

*The colony of American white ants at Vienna.*—At page 16, vol. xi, of this Magazine, when noticing the fact of an African species of *Termitidæ* having acquired a (happily) temporary footing in the Museum at Kew, I alluded to the colony of the American *Termes flापipes* in the gardens of Schönbrunn at Vienna. According to a note by Dr. Brauer in a just-published work on the *Neuroptera* of Austria (in the "Festschrift" der zool.-bot. Gesellschaft in Wien, 1876), it appears that this colony has been destroyed by a clearing-out of the hot-house infested by it, after many years' existence. There seems, however, to be some idea that the species is found in Portugal. It can naturally endure the severity of a New York winter; so we may expect to hear of it from other parts of Europe.—R. McLACHLAN, Lewisham: 8th April, 1876.

We are requested to announce that Mr. A. H. Swinton, of Binfield House, Waterden Road, Guildford, is engaged upon a work "On the passions evinced by Insects," especially as indicated by the sounds known as insect-music, considered as instrumental and vocal. The work will also contain researches on the hearing-power of insects, and an appendix of the genera known or reputed to have the power of producing sound; and it will be illustrated by four plates and wood-cuts.—EDS.

*The Doubleday collection.*—We have been requested to insert the following letter:—

South Kensington Museum, London, S.W.:

7th day of April, 1876.

Sir,

Bethnal Green Branch Museum.

I beg to acknowledge receipt of a memorial, bearing date 18th March, 1876, signed by you and seven other gentlemen representing the Haggerston Entomological Society; the East London Entomological Society, the South London Entomological Society, and the West London Entomological Society, in reference to the Doubleday Collection of Lepidoptera which has been lent by the Trustees for exhibition in the Branch Museum at Bethnal Green.

I have the pleasure to acquaint you, that upon careful consideration of the arrangements necessary for the proper care of the collection, it has been decided to give full effect to the wishes which have been expressed on the part of the four Entomological Societies named.

A room will be specially provided, and an attendant will be in readiness to show the collection to such persons as may apply to the officer in charge for permission to inspect it.

I am, Sir,

Your obedient Servant,

RENCLIFFE OWEN,

J. A. CLARK, Esq.,

Director South Kensington.

11, Duncan Place, London Fields, Hackney, E.

## Review.

MONOGRAPHIA LYGEIDARUM HUNGARIE. AKIR MAGYAR TERMÉSZETTUDOMÁNYI TÁRSULAT MEGBÍZÁSÁBÓL. Irta Dr. HORVÁTH. Budapest, 1875. 4to, pp. 1—109, and 1 plate.

In this work, the author has described the species of *Lygeida* (*Hemiptera-Heteroptera*) known by him to occur in Hungary, of which three are cited as new, namely, *Plinthis hungaricus*, *Pachymerus validus*, and *Emblethis ciliatus*. The number of species enumerated is 100, but doubtless, as collectors in Hungary have been few, there are more species yet to be discovered there. The coloured plate is well executed, and the three new species are figured thereon. Unfortunately for most Hemipterists, the work is written in the Hungarian language, but the diagnoses of the genera and species are in Latin, and, referring mainly to known forms, may suffice for practical purposes.

Where there is so much to commend—and pains have evidently been taken to

be right—it would appear invidious to advert to the revival of the generic names *Pachymerus*, *Platygaster*, and *Heterogaster*, which have long been disused on account of prior employment; the more especially, as the author has followed and not led the way: in this, as in other things, all will be set right eventually. We hail, in the person of the author, the rising of a new star in the east, which we hope may prove to be the nucleus of a new constellation, by the light of which the Insect-Fauna of Hungary, now imperfectly known, may be fully investigated.

ENTOMOLOGICAL SOCIETY OF LONDON: 3rd May, 1876.—Sir S. S. SAUNDERS, C.M.G., Vice-President, in the Chair.

Mons. Jules Lichtenstein, of Montpellier, was elected a Foreign Member.

The Rev. J. Hellins sent for exhibition various British *Lepidoptera* lately submitted to M. Guenée for his opinion and determination. The collection included a dark variety of *Acronycta myrica* from Mr. Birchall; certain *Aidalia* sent by Mr. Hellins and Mr. G. F. Mathew, apparently to be referred to *mancunata*; several extraordinary aberrations referred to *Melanippe rivata*, *Oporabia* sp.?, *Coremia ferrugata*, &c., from Mr. Dale and Mr. Mathew; an example of *Polia chi*, var. *olivacea*, from Major Hutchinson; several *Eupithecia* from Dr. Buchanan White, including the var. *oxydata* of *E. subfulvata*, and an insect which Dr. White proposed to name *septentrionata*, not known to M. Guenée; the most important of all was a *Noctua*, bearing some resemblance to *Xanthia circellaris* (*ferruginea*), not known to M. Guenée, taken at Queenstown, over bramble-blossoms, in July or August, 1872, by Mr. Mathew. Concerning this insect it was remarked, that it had been shewn to Dr. Staudinger by M. Guenée, and that it was also unknown to him as European.

Mr. Douglas exhibited one of the palm-nuts (fruit of *Phytelephas macrocarpa*), known as vegetable ivory (or, in the vernacular, as 'Coroza,' 'Corassa,' or 'Corusco'), imported in this instance from Guyaquil, infested by the larva of a beetle allied to *Bruchus*, which occasioned considerable damage to cargoes of these nuts.

Mr. Distant exhibited a series of six examples of the butterfly *Ithomia Tutia*, Hewitson, from Costa Rica. These had been selected to shew the very considerable variation in markings to which the species is evidently liable. He also communicated remarks on the *Rhopalocera* of Costa Rica, as addenda to the paper by Messrs. Butler and Druce, published in the Proc. Zool. Soc. for 1874.

The Secretary read a communication from the Foreign Office, enclosing a letter from Her Majesty's Minister at Madrid, concerning the ravages of Locusts in Spain. In this letter it was announced that considerable apprehension existed in certain parts of Spain as to the probability of the crops being destroyed by these insects during the ensuing season, as vast numbers of young Locusts had appeared, and military aid had been ordered in the affected districts. More precise information as to the species of Locust indicated was considered desirable.

DESCRIPTIONS OF SOME NEW GENERA AND SPECIES OF NEW  
ZEALAND COLEOPTERA.

BY D. SHARP, M.B.

Some years ago, I received from Mr. Lawson, of Scarborough, some beetles collected in New Zealand by his brother, Mr. Thomas Lawson, of Auckland; and, subsequently, some additional species, in which he thought I should be interested, were liberally placed at my disposal by him. Captain Thomas Broun, of Auckland (now of Tairua), shortly afterwards sent me a number of species, the greater part of which I was obliged to return to him without names; and, lately, this gentleman has continued his entomological researches, and has forwarded me from time to time a considerable number of interesting species, a large proportion of which are undescribed. I have also received from Henry Edwards, Esq., of San Francisco, some interesting species collected by him some years ago in New Zealand; and I may mention that Captain Hutton, of Dunedin, also forwarded me a lot of beetles from the southern parts of the islands, but these, to my great regret, were lost in the post.

I have thus had the opportunity of examining a pretty good number of beetles from this interesting part of the world; but I am sure that those I have seen form only a small portion of the existing forms, and I feel pretty confident that the New Zealand species of the Order will reach the number of two or three thousand.

I now propose describing a few forms, many of which are of considerable interest, from the impossibility of reconciling them even with the best and most recent classifications. It would of course be premature at present to attempt to pronounce an opinion on the New Zealand Coleopterous fauna as a whole, but it is already certain, that highly specialized forms are in less proportion to the little specialized forms than is the case in the Northern portions of the Old World. At the same time, such forms are by no means absent; for instance, several indigenous species of *Cicindela* have been found.

Most of the new genera to be now described are what are called synthetic forms, *i. e.*, forms in which the characters of what may be considered distinct groups are combined in one insect. These new genera are nine in number, *viz.*, 1 of *Catopidæ*, 1 of *Colydiidæ*, 3 of *Tenebrionidæ*, and 4 of *Chrysomelidæ*.

HYDROPORUS WAKEFIELDI, *n. sp.*

*Fuscus, sub-opacus, pedibus testaceis, thorace lateribus, elytrisque*

*flavosignatis, crebre punctatus; thorace lateribus minus curvatis, antrorsum leviter angustatis.*

*Long. corp.  $4\frac{1}{4}$  mm.*

*Mas, femoribus posterioribus apicem versus triangulariter dilatatis.*

Head closely and rather finely punctured, blackish, with the clypeus reddish at the front margin. Antennæ yellow, joints 5-10 infuscate, with their bases pale. Thorax blackish, with the sides broadly yellow, the hind angles are nearly rectangular, and the sides are but little curved, and distinctly narrowed towards the front, the anterior angles being greatly produced, the surface is finely, closely, and evenly punctured, the punctuation becoming more indistinct towards the sides. Elytra blackish, with yellow marks, very variable in extent, they are nearly dull, and are evenly and finely, but distinctly, punctured, and on the middle of each is a series of larger punctures, they are regularly curved towards the apex. Legs yellow, with the hind tarsi more or less infuscate, the hind tibiae also sometimes darker. The under-surface is fuscous, closely and evenly punctured. The prosternal process is elongate, and much compressed laterally: the fourth joint of the front tarsi is quite visible between the lobes of the third joint.

In the male, the middle tibiae are slightly curved, and the femora of the hind legs are triangularly dilated, so as to form an acute angle on the hind margin near the apex.

Found at Canterbury by Mr. Wakefield, and given to me by Mr H. W. Bates.

OBS.—Structurally, this species seems much allied to our European *H. carinatus*, but the prosternal process is more compressed laterally.

#### HYDROPHORUS DUPLEX, *n. sp.*

*Fuscus, fere opacus, crebre punctatus, pedibus rufis, thoracis lateribus, elytrisque indistincte testaceo-signatis; thorace lateribus bene curvatis, antrorsum angustatis.*

*Long. corp.  $4\frac{1}{2}$ — $4\frac{3}{4}$  mm.*

This species is very similar to *H. Wakefieldi*, but is rather larger, and the sides of the thorax are more rounded and narrowed in front; the testaceous markings are very indistinct, and the elytra have some obscure longitudinal elevations, which render their surface a little uneven, and the hind legs are longer.

Apparently a common species in the province of Auckland; it has been sent me both by Messrs. Broun and Lawson.

OBS.—Until I had carefully examined this species, I considered it to be only a variety of *H. Wakefieldi*, and I have sent it under that name to one or two correspondents. However, notwithstanding that it is very closely allied to the Canterbury species, I do not now think it will prove a variety thereof.

#### CYCLONOTUM MARGINALE, *n. sp.*

*Nigrum, nitidum, sat convexum, pedibus rufo-piceis, antennis pal-*

*pisque rufo-testaceis; crebre punctatum, elytris seriebus punctorum apicem versus profunde impressis; tarsis posterioribus brevibus, articulo basali 2° longitudine æquali.*

*Long. corp. 4½ mm.*

Head closely and finely punctured, and also with some larger punctures, which are most numerous and distinct at the sides behind the eyes. Thorax short, of the form usual in *Cyclonotum*, black, with the margins rather more dilute in colour, rather closely and finely punctured, and rather shining. Elytra shining black, with the lateral margins pitchy, each with ten rows of coarse punctures, which are most deeply impressed towards the apex, the internal ones being quite obsolete at the base, the interstices are finely and sparingly punctured, the lateral margins much explanate. Prosternum with a large process which is acute at its apex, in the middle in front. Mesosternal process stout, triangular, but with the sides depressed, so that it appears almost linear. Middle of metasternum raised, the elevated part shining and sparingly punctured, limited by two lines converging towards the hind coxæ, the sides densely and finely punctured, and quite dull. Legs short, pitchy, becoming more dilute towards the tarsi; the inner (or upper) face of the hind tibia flat, shining, with a few fine punctures, without any striæ; basal joint of the hind tarsus quite equal to the 2nd in length (indeed, when fully exposed, it is a little longer), 3rd rather shorter than 2nd.

Sent from Auckland by Mr. Lawson.

This interesting species approaches in appearance to *Cyloma Lawsonus*; compared with our European *Cyclonota*, it is aberrant in several respects, but as the extra European allied species are numerous and but little known, it would be premature to make a new generic name for it.

#### METOPONCUS BROUNI, *n. sp.*

*Elongatus, castaneus, nitidus, fere lævis, elytris fuscis basi dilutioribus, pedibus abdominisque basi testaceis.* *Long. corp. 5—8 mm.*

Antennæ dark red, short and stout, 2nd joint short and stout, but larger than 3rd, 6-10 differing very little from one another, transverse, 11th rather paler than the preceding joints, and a good deal longer than the 10th. Head of a chestnut colour, with a very few, scattered, moderately large punctures, and also with some sparing very fine punctures, it is not much shining. Thorax longer than broad, a little narrowed towards the base, similar in colour to the head, appearing at first impunctate, but with a series of four or five extremely obsolete punctures on each side of the middle, the base with a very fine, short, channel in the middle. Elytra scarcely longer than the thorax, of a blackish colour, with the base reddish, impunctate. Hind-body with the two basal segments yellow, the following ones reddish, but each with a large dark mark across the middle, it is impunctate and shining. Under-side of head almost impunctate, and with a well marked lateral margin.

Numerous specimens of this insect have been sent me by Captain Broun, who informs me that it is found under the bark of decaying

logs of *Dammara australis*, in company with *Mitrastethus baridioides*, Redt., and *Xenocnema spinipes*, Woll. The species varies a good deal in size.

CAMIRUS,\* *n. gen.* (*Catopidæ*).

*Antennæ* 11-articulatæ, apice leviter incrassatæ, articulo 8° contiguus minore.

*Palpi* maxillares articulo ultimo magno, sub-securiformi.

*Caput* parvum, oculi prominuli, liberi.

*Tibiæ* pubescentes.

Maxillary palpi with the 2nd joint elongate and slender, 3rd not half so long as 2nd, 4th much dilated internally so as to be nearly securiform. Head small, not adapted in form to close the front of the thorax, the eyes very convex, almost hemispherical, their hind part free. Mesosternum large, slightly separating the middle coxæ, which are much immersed. Hind coxæ very nearly contiguous, inwardly broad, but pointed at their outer extremity, their trochanters rather large and adapted to the femora. Hind-body with five visible ventral segments.

The very anomalous insects for which I make this generic name, I associate with the *Catopidæ*, because they agree satisfactorily with those insects in the structure of the prothorax, though in other respects they are very anomalous. In many points, they approach the *Scydmenidæ*, and will probably ultimately be considered a distinct group, intermediate between the *Catopidæ* and *Scydmenidæ*. The two species are extremely dissimilar in appearance, and may ultimately be made distinct genera; but as they possess in common the above prominent characters, I associate them together for the present.

CAMIRUS THORACICUS, *n. sp.*

*Minus convexus, niger, nitidus elytris hirsutis, antennis pedibusque rufis; thorace transversim sub-cordato, profunde canaliculato, punctis basalibus et lateralibus, paucisque discoidalibus magnis, elytris striatis, striis fortiter punctatis.*

*Long. corp.* 3½ mm.

First joint of antennæ rather longer and stouter than 2nd, 2-4 differing but little from one another, 5 and 6 each a little shorter than its predecessor, 7th distinctly stouter than 6th and quite as long as it, 8th narrower and much shorter than the adjoining joints, 9th-11th similar to one another in breadth, and a little broader than the 7th, the 10th about as long as broad. Thorax broader than long, rounded at the sides, greatly narrowed towards the front, and sinuate behind the middle, so that the hind angles are well marked right angles, it is of a shining black colour, and bears a few hairs, has a very deep channel on the middle which does not reach quite to the front or base, a deep narrow basal fovea on each side, a series of coarse punctures (those towards the front finer) along the side margins, one or two

\* Cam-ī-rus.—D. S.



other coarse basal punctures, and a few others, scattered on the surface. Scutellum moderately large. Elytra rather rounded at the shoulders, which are a good deal broader than the base of the thorax, rather densely clothed with a long, fine pubescence, and with eight rows of coarse punctures, which are placed in depressed, not well defined striæ. Legs red. Tarsi slender, basal joint of hind tarsus quite as long as the two following together, spurs of tibiæ minute.

Sent from Auckland by Mr. Lawson.

OBS.—I have at present before me only a single female of this very remarkable species, which is intermediate in appearance between *Scydmaenus* and *Catops*; I noted that a male which I formerly examined, had the two basal joints of the front tarsi dilated, and a minute supplemental apical segment to the hind body; my recollection on this latter point is not very trustworthy.

*CAMIRUS CONVEXUS, n. sp.*

*Castaneus, nitidus, parcius aureo-pubescent; thorace punctis basilibus 7; elytris stria suturali, punctisque humeralibus.*

*Long. corp. 2¼ mm.*

*Mas, tarsis anterioribus articulis duobus leviter dilatatis; abdomine segmento 5º ventrali fortiter emarginato-reflexo.*

Antennæ similarly formed to those of *C. thoracicus*, but rather less elongate. Thorax greatly narrower than the elytra, transversely convex, as well as depressed in front, the sides sinuate and contracted behind the middle, the hind angles rectangular but not well defined, it bears an irregular bright yellow pubescence, and is impunctate, except for a series of large punctures, about seven in number, along the base. Elytra of a shining chestnut colour, with a similar pubescence to that of the thorax, with a well marked sutural stria, and impunctate, except for some coarse punctures at the shoulders. In the male, the basal joints of the front and middle tarsi are distinctly dilated, and the apical ventral segment is very broadly emarginate, the margins of the cut away part much elevated.

We are indebted to Mr. Lawson also for this species.

OBS.—This insect has quite the facies of a *Eumicrus* (in the *Scydmaenidæ*), and I had formerly referred it to that family; but the front coxal cavities, which are closed behind in the same manner as in *Catops*, indicate that it cannot be classed with the *Scydmaenidæ*. It is a remarkable fact that two insects, so distinct from other known forms, and so closely related *inter se*, as this species and *C. thoracicus* appear to be, should yet be so dissimilar in appearance from one another.

*STERNAULAX LÆVIS, n. sp.*

*Nigerrimus, nitidus; thorace margine laterali subtili integra, basi medio foveolato; elytris basi quadri-impressis, stria unica externa integra.*

*Long. corp. 7½ mm.*

Thorax with the lateral margin very fine, but distinct throughout, near the front angles it is more distinct than behind, parallel with it some fine punctures, which extend also part of the way along the base, where indeed they are coarser than at the sides. Elytra very smooth and shining, with four impressions at the base, from the outer one of which there starts a stria, which, though much sinuated and very near the side, reaches the apex and is there deeper than elsewhere; at the extremity of the elytra are three or four abbreviated striæ, the outer one forms the termination of the lateral stria just described, and the one next it is continued some distance forward, though extremely fine in the front part, and is widely separated from the external stria. From the first (internally) and third of the basal impressions, there proceeds an extremely fine, short needle-scratch; the one from the third impression runs very obliquely towards the external stria. Except for these marks, the elytra are quite smooth. The pygidium and propygidium are coarsely punctured.

Auckland; a single specimen sent by Mr. Lawson.

Obs.—The genus *Sternaulax* consists of only two species, viz., *Sternaulax zealandicus*, Marseul, and a Madagascar species; the present species must be closely allied to Marseul's *S. zealandicus*, but differs from his figure and description by the striation of the elytra, and the want of punctuation at their apex.

#### PLATYSOMA COGNATUM, n. sp.

*Ob'ongo-ovatum, sub-depressum, nigrum, nitidum, antennis tibiisque obscure rufis; prothorace elytrisque impunctatis, illis striis dorsalibus 3 profunde impressis, quartaque interna apicali abbreviata.*

*Long. corp. 3½ mm.*

Head with a deep and well-marked line between the antennæ. Thorax impunctate, with the lateral and front margins entire. Elytra with three deep, entire striæ, and an abbreviated one at the extremity on the inner side of these, impunctate. Pygidium and propygidium rather coarsely punctured. Front tibiæ with four, middle with three, hind with two, sharp teeth.

This species also is due to Mr. Lawson, who sent it from Auckland.

Obs.—This species is extremely closely allied to our European *P. frontale* and *P. depressum*, and in form is about intermediate between the two. It may, however, be readily distinguished from them by the denticles of the tibiæ, and the want of lateral punctuation on the thorax.

#### SAPRINUS PEDATOR, n. sp.

*Angustulus, convexus, nigro-piceus, impunctatus; elytris stria suturali integra, striisque 5—6 basalibus abbreviatis: tibiis anterioribus edentatis, extus grosse ciliatis, intermediis et posterioribus dilatatis, extus grosse punctatis.*

*Long. corp. 4—4½ mm.*

Antennæ pitchy. Mandibles greatly exposed. Head with a very deep arched

impression, extending across it at the base of the mandibles, and also with an arched impressed line connecting the posterior portions of the eyes. Thorax short, considerably rounded at the sides, impunctate. Elytra with a well-marked sutural stria, and with five or six oblique short basal striæ; impunctate. Pygidium impunctate. Front tibiæ reddish, broad, rounded externally, and toothless, but fringed with coarse parchment-like ciliæ. Middle and hind tibiæ much dilated, furnished externally with large deep pits, in each of which is placed a coarse cilium, these ciliæ on the middle tibiæ are moderately long, but those on the hind pair are very short. Hind femora much dilated. Basal ventral segment elongate, the others so reduced in the middle as to appear there only like approximate striæ.

This extraordinary species was sent me by Captain Broun, with the No. 188 attached, and the following information: "On sea beach, one found when about to fly from *Algæ* on 11th December, 1875; and on 9th January, 1876, four under decayed fish, and another amongst *Algæ*." The ventral segments (which, in the condition of repose, are, as I have described, completely retractile) appear to be very mobile, so as to be capable of great elongation.

*SORONIA HYSTRIX*, n. sp.

*Nigro rufoque variegata; suprà tomentosa et setis erectis adspersa; prothorace lateribus undulatis.* *Long. corp. 3 mm.*

Antennæ obscure reddish, 1st joint very broad and dilated, 2nd rather broader than the slender 3rd joint, 4 and 5 distinctly longer than the following, which are short and small, 9—11 forming a rather long club. Head blackish, dull, covered with tomentum, and with some erect setæ, the eyes bearing a patch of setæ. Thorax strongly transverse, the front margin sinuate on each side, the lateral margins waved so as to show three or four broad shallow emarginations, the base at the hind angles cut away (or suddenly narrowed), the hind angles sharply defined right angles; the colour is blackish with red marks at the sides, the surface being uneven, velvety, and bearing short black setæ. Elytra reddish, but rendered black by their clothing, which consists of a kind of tomentum, accumulated at some points into thicker patches, and bearing erect setæ, most of which are black, but those about the margins are paler. Legs reddish. Under-surface infusate-red, passing into blackish about the middle.

Tairua; Captain Broun.

OBS.—Though this peculiar little insect bears at first sight but little resemblance to our European *Soronia*, I believe, from my examination, that they are its nearest allies; and do not detect any prominent structural characters to distinguish it. I anticipate, from the specimens before me, that the species varies a good deal in colour.

*XENOSCELIS PROLIXUS*, n. sp.

*Tarsis latis, breviusculis, articulo quarto obtecto. Elongatus, depressus, fusco-ferrugineus, sat nitidus, tenuiter pubescens, antennis pedibusque crassiusculis; crebre punctatus.* *Long. corp. 4½—5½ mm.*

Of peculiarly elongate, depressed, sub-parallel form. Antennæ stout, reddish, with the club more obscure; in structure like those of *Cryptophagus*, 1st joint almost globular, 2nd short and stout, 3rd not elongate, but longer than the contiguous joints, 4-8 similar to one another, bead-like, 9th and 10th transverse, 11th rather large. Head rather closely and coarsely punctured, the eyes but little prominent. Thorax distinctly longer than broad, nearly straight at the sides, very slightly narrowed behind, the side margin in front of the hind angles with a minute acute denticle, and the hind angle itself minutely acute; the surface is rather coarsely but not densely punctured, so that the interstices between the punctures are shining, it bears a fine and scanty pubescence, is flattened along the disc, and indistinctly bi-impressed. Elytra very elongate, bearing rows of distinct, but not very coarse punctures, the punctures bear a fine hair. Under-surface dark reddish, very finely and scantily pubescent. Legs stout, reddish; the tibiæ short, thickened towards their extremity, and curved; the tarsi short, the three basal joints short and stout, and very pubescent beneath, the 3rd joint deeply emarginate, so that the short and small 4th joint is entirely concealed, and can only be detected on a careful examination; 5th joint short.

Sent both from Auckland and Tairua by Messrs. Lawson and Broun, but only four or five specimens; Captain Broun's specimens were among some species forwarded to me as found on *Cyathea dealbata*.

Obs.—This remarkable species is, I have no doubt, correctly placed near Mr. Wollaston's *Xenoscelis deplanatus* (Canary Islands). In general structure it is very similar to that species, so that I have given it the same generic name, notwithstanding the difference in the tarsi.

### RHIZONIUM, n. gen. (*Colydiidæ*).

*Coxæ posteriores contiguæ.*

*Abdomen segmento basale secundo longiore.*

*Caput lateribus haud reflexis.*

*Antennæ 11-articulatæ, clava tri-articulata.*

N.B.—*Ex affinitate Teredi et Oxylæmi, sed primo visu Rhizophago simile.*

Antennæ short and stout, with the basal joint quite exposed, the club consisting of the transverse 9th and 10th joints and the narrower 11th joint. Last joint of maxillary palpi longer than the preceding. Eyes free and prominent. Front coxæ contiguous, middle and posterior nearly so. Metasternum elongate. First ventral segment of hind-body considerably longer than the following. Legs rather slender; the tarsi rather short and moderately stout, their basal joint not elongate.

Obs.—The insect for which I make this generic name, in its form and sculpture, so much resembles a *Rhizophagus*, that I omitted it in my paper on the New Zealand *Colydiidæ*, from having placed it on one

side (without examination) as an ally of that group of the *Nitidulidæ*. Its affinities, however, are certainly with *Teredus* and *Oxylæmus*, though the structure of its antennæ (which are not very dissimilar from those of *Aulonium*) readily distinguish it therefrom.

**RHIZONIUM ANTIQUUM, n. sp.**

*Sub-depressum, sat nitidum, fortiter punctatum, ferrugineum, nudum.*

*Long. corp. vix 2 mm.*

Antennæ reddish, much shorter than head and thorax, rather stout; 1st and 2nd joints stout, not longer than broad, about equal to one another; 3—8 broad, very short, quite similar to one another; 9th and 10th rather strongly transverse, quite distinct from one another; 11th a good deal narrower than 10th, but longer than it. Head about as broad as the thorax, rather coarsely punctured, without any raised lateral margins. Thorax quadrate, about as long as broad, and about straight at the sides, the hind angles very indistinct on account of the curving of the base; the surface rather coarsely punctured. Elytra moderately closely, and coarsely punctured, the punctures arranged in rows, which, however, are not very distinct.

Four specimens of this interesting little species were sent me by Captain Broun among some insects found on *Cyathea dealbata* at Tairua.

**TELMATOPHILUS DEPRESSUS, n. sp.**

*Colore variabilis, testaceus, vel fusco-testaceus, vel fere niger; depressus, nudus, sed minus nitidus; thorace parce subtiliterque punctato, lateribus sinuatis, angulis posterioribus rectis; elytris subtiliter punctato-striatis, punctis apice obsoletis.*

*Long. corp. 2½ mm.*

Antennæ yellow; 1st joint thicker and longer than 2nd; 3rd slightly longer than 2nd; 5th a good deal longer than either 4th or 6th; 7th also distinctly larger than the contiguous joints; 8th joint small; 9—11 of about the same width, forming an abrupt club, very loosely articulated; the 9th and 10th transverse. Head finely and sparingly punctured. Thorax considerably narrower than the elytra, rather strongly transverse, the sides somewhat sinuate behind the middle, the hind angles sharply marked and nearly rectangular, the surface dull, but only finely and sparingly punctured, transversely depressed in front of the base, and with a very minute basal impression on each side. Elytra elongate and flat, with rows of fine punctures, which become obsolete at the extremity. Legs yellow.

Probably common in the Auckland district.

OBS.—This species is very variable in colour. Its flattened form, destitute of pubescence, give it at first sight but little resemblance to our European *Telmatophilus*; but, nevertheless, it possesses the structure of the tarsi highly developed after the manner of *Telmatophilus*. The figure in Du Val's *Genera des Col. d' Eur.* (pl. 52, f. 259b) of the tarsus of *Psammæcus bipunctatus* is very like that of this species.

(To be continued.)

NATURAL HISTORY OF *LYCÆNA ARGOLUS*.

BY WILLIAM BUCKLER.

I have long wished to work out the economy of this species, especially with regard to the question of a second brood, and at length, partly by the kind help of friends, and partly by a lucky find of my own, I have been able to settle my problem.

In the spring of 1862, I had a few eggs laid by a captured female on the footstalks of flowers of *Ilex aquifolium*; the larvæ hatched during the last two days of May, fed first on the flower-buds of holly, afterwards on the young green berries, and by June 29th, that is, about thirty days, had changed to pupæ; but, as no butterfly ever appeared from any of them, my attempt at that time came to an unsuccessful end.

Last year, I received on June 20th, two full-grown larvæ, feeding on tender young leaves of holly, and which had been taken by beating, a day or two previously, by Mr. G. F. Mathew, R.N.; one of them had already ceased to feed, and had changed colour; the other was still feeding well, and I watched it eating a large piece out of a fresh gathered tender leaf; the next day, this also rapidly changed colour, and on June 25th and 26th, both successively became pupæ: one fixed with its head downwards on the upper-side of a leaf, the other with its head upwards on the under-side. From the second of these two pupæ, after 18 days, there came a female butterfly, on July 14th; the first pupa remained over till May 25th, 1876, when it produced an ichneumon.

After this, on 5th August, I received from Mr. E. F. Bisshopp, of Ipswich, who had taken great pains to secure from female butterflies of the second or summer flight, a batch of seven or eight eggs, laid just beneath the flower heads of an umbel of *Hedera helix*; unfortunately, only two of them proved fertile, and I had the further misfortune to kill one of the larvæ, whilst changing its food, but in the very same process was afterwards lucky enough to find compensation for its loss. For, early in September, I found I had unconsciously gathered with a head of ivy flower buds, resting on one of the flower-stalks, a larva in its third moult: and, being thus led to look for more, I afterwards found two others in similar situations.

The dates for the changes of the larva, which I succeeded in carrying through from the egg, and which, from the first, ate tender ivy leaves rather than flowers, are as follows: hatched August 8th; moulted by the 12th, and a second time by the 16th, and a third time by the 20th; after that, I have recorded a moult between September

1st and 5th; by the 10th, it was mature, on the 13th it fixed itself for changing, and on the 17th, became a pupa; thus passing just forty days in the larva state; the butterfly, a male, appeared on 6th April, 1876; two hundred and two days having been passed in the pupa state,—perhaps its emergence had been hastened somewhat by being kept sheltered indoors.

In a general way, therefore, the year's history may be divided as follows: the first flight of the butterflies, end of April, and in May; larvæ hatched at the end of May, and feeding on holly flowers and young leaves, or on young ivy leaves through June (Mr. Harwood, of Colchester, informs me he has also found them on flowers of *Rhamnus frangula*); the second flight of butterflies in July; the second brood of larvæ feeding in August and September, on flower-buds and young leaves of ivy; the winter passed in the pupa state.

The egg of *Argiolus* is very much like that of *Alexis*, except that it is rather larger; being circular, flattened, and rather depressed in the centre; the whole surface—except just a central spot—overlaid with raised reticulation, with little knobs at the angles; the shell pale bluish-green, the raised reticulation whitish; the larva escapes by making a hole near the centre of the upper surface.

The young larva, in the spring, is something like that of a *Zygæna* in shape, plump, and hairy (as was noticed both by Mr. Hellins and myself), even while quitting the egg-shell, with a greenish-white body and dark head, and very slow in its movements; but the summer larva I found for the first few hours to be very active, walking about with almost a looping progression, and much more slender than that of any *Lycæna* at present observed; the head moderately large, rough and prominent, of a chocolate-brown colour; the body shining, very pale translucent-greenish, and apparently naked; and looking at this unusual form of a newly-hatched *Lycæna*, one tried to account for it from the heat of the weather, and by thinking that it was better fitted to pierce the hard buds of the ivy just formed, than if it were at first more the shape of its congeners. After the first moult, it became stouter in figure, pale ochreous-green in colour, and clothed with unusually long, whitish, soft, silky hairs, and was very sluggish, no longer differing from larvæ of the spring brood.

When about a fortnight old, it attains the length of  $\frac{1}{8}$  inch, and becomes of the usual *Lycæna* shape, with smooth glistening skin, and colour similar to that of the ivy buds; in about three weeks, it is  $\frac{1}{4}$  inch long, and stout in proportion, showing a paler streak on the

ridges of the back, thin double slanting lines on the sides, and a margin of yellowish-white along the sub-spiracular region. In about five weeks it is full-fed, and then reaches the length of  $\frac{3}{8}$  inch, and sometimes more, when stretched out in crawling; the figure somewhat onisciform, the head very small and retractile into the second segment beneath; the second segment, which is the longest, is but slightly convex above, the others are arched on the back, the third, fourth, and fifth being the highest, and thence the others slope a very little to the tenth; these eight segments, from three to ten, are crested with two ridges of humps, between which lies the sunk dorsal space, broad and hollow on the third and fourth, and flattened and narrowing gradually to the tenth; on these segments the divisions are deeply cleft through the ridges—thus producing the appearance of humps; segments eleven, twelve, and thirteen are simply convex, and slope towards the anal end: the sides, although sloping outwards, become almost concave near the projecting rounded sub-spiracular ridge, which continues round the anal segment, and overlaps all the short legs; the belly is flattened.

In colour, there seem to be several varieties: one, a bright yellowish-green, with paler lines as above, the head purplish-brown, but looking almost black by contrast, and with an ochreous streak above the mouth and at the base of the papillæ, the spiracles round and flesh-coloured, the whole skin of the body velvety, with its surface thickly covered with yellowish warty granules, each bearing a minute whitish bristly hair.

Another variety, of the same yellowish-green ground-colour, has dashes of deep rose-pink on each humped ridge of the back and in the dorsal channel continued to the anal end, and an additional dash on each side of the fifth segment; along the sides, fine double lines of pale greenish-yellow, edged with darker, slanting backwards; the sub-spiracular ridge itself of a whitish-flesh colour, but deepening above and below with a narrow border of full rose-pink, which again melts into the green ground.

Another variation, which, from the too rapid development of the example exhibiting it, was but imperfectly noted, is of a very pretty mixture of green and black; the ground colour green, as before, a transverse bar of black across the middle of the second and the beginning of the third segments, a dorsal series of thick dashes from the third to the tenth, on the eleventh, a dash on either side enclosing the green ground as an interruption, with the dorsal marking again occurring on the



twelfth and thirteenth ; on each ridge of the back, a row of roundish spots, and, a little lower on the side, a row of squarish spots, and, lower again, in the spiracular region, a row of roundish spots placed at the segmental divisions ; on the fifth segment, the upper markings thicker and running together.

About four or five days before changing, the larva ceases to feed, becomes of a dingy olivaceous-pink or mouse colour, and spins a fine layer of silk as a foot-hold, and a stout thread as a cincture, crossing the front of the third segment, and strengthened near the base on either side by two other short threads joining it, and thus forming triple moorings.

In each instance, I found the operation of changing to a pupa had brought the cincture away from its resting place on the larva to below the thorax of the pupa, so that this thread, at first slanting forwards from the base over the larva, slanted now a little backwards over the pupa.

The pupa is about  $\frac{1}{8}$  inch in length, and  $\frac{1}{8}$  inch in width, of a dumpy figure, thickest at the middle of the abdomen, with the head and thorax rounded, and the latter very slightly keeled : a depression occurs between the thorax and abdomen, where the cincture passes and holds it secure ; from thence, the abdomen swells out full and arched towards the bluntly rounded anal end ; the wing-covers are long in proportion, but not at all projecting. In colour, it is pale brownish-ochreous, with a blackish-brown thin dorsal line marking the thoracic keel, and on the abdomen a series of rather blotchy arrow-head dorsal dashes, and a sub-dorsal series of larger dark brown blotches, that nearest the thorax made conspicuous by the segment next below being without one ; the thorax is marked with oblique rows of brown freckles directed from the sides of the head towards the end of the keel at the depression ; the eye-covers are blackish ; the wing covers pale greyish with rays of brown freckles, and outlined with a thin brown edging, their surface smooth, rather more glistening than the other parts, which are thickly studded with fine, short, brownish bristles.

Emsworth : June 12th, 1876.

P.S.—It may be mentioned that eggs were laid during the last month by a female *Argiolus*, in captivity, on holly, and also on young shoots of ivy, and that both Mr. Hellins and I find that the larvæ eating ivy are more advanced than those feeding on holly.

## LIST OF JAPANESE BUTTERFLIES.

BY THE REV. B. P. MURRAY, M.A.

It has occurred to me, from my own difficulties in investigating the Lepidopterous fauna of Japan, that a list of all such species of *Rhopalocera* as are known to me to have been recorded (rightly or wrongly) from that country, may be not altogether useless to other workers; and I have accordingly prepared the following, which must be considered as merely preliminary.

The authors to whom I am principally indebted are Motschoulsky, Ménétriés, De l'Orza, and Butler. I cannot help thinking that some few of the species have been recorded in error, and that a great deal of confusion exists in the synonymy of some genera.

*Danaïs Chrysippus*, L.; *Tytia*, Gray (this species extends from the Himalaya, through Mongolia, to Japan).

*Debis Sicelis*, Hew.; *Diana*, Butler (probably identical with the next species); *marginalis*, Motsch.; *Whiteleyi*, Butler (possibly a synonym of the next species); *Maacki*, Brem.

*Neope Gaschkevitschi*, Mén. (there is a second species belonging to this genus in Japan, but I am unwilling to describe it from the very worn specimen in my collection).

*Satyrus Epimenides*, Mén.; *Dejanira*, L.; *Deidamia*, Eversm.; *S. (?) Schrenki*, Mén.

*Hipparchia Hyperanthus*, L.; *Phædra*, L., var. *bipunctatus*, Motsch.

*Mycalesis Gotama*, Moore; *Polydecta*, Cram. (quoted by De l'Orza, but the specimens should probably be referred to *M. Gotama*, Moore); *Perdiccas*, Hew.; *Nicotia*, Hew.

*Ypthima Argus*, Butler; *Baldus*, Don. (? = *Y. Argus*, Butler).

*Cænonympha Œdipus*, Fabr.; *Davus*, Fabr.

*Triphysa nervosa*, Motsch.

*Argynnis Sagana*, Doubl., Hew.; *Paphia*, L.; *Daphne*, W. V.; *Laodice*, Pall., var. *Japonica*, Mén.; *Niphe*, L.; *Ella*, Brem., ? = *A. Anadyomene*, Feld.; *Daphnis*, Cram. (this is a synonym of *A. Cybele*, Fabr., which is a N. American species. It is quoted with a query by Motschoulsky in his list of Japanese *Lepidoptera* in *Études Ent.*, ix, 1860); *Adippe*, L., *Nerippe*, Feld., *pallescens*, Butler (I cannot help thinking that these are all forms of one variable species); *Aglaia*, L.; *Selenis*, Eversm.; *Ino*, Rott.

*Melitæa Athalia*, Rott. (*Phæbe*, W. V.); *Didyma*, Esp.; *Leucippe*, Schneid. (*Athalia*, Esp.); *Protomedea*, Mén.

*Araschnia Burejana*, Brem. (*strigosa*, Butler); *Prorsa*, L.

*Vanessa c-aureum*, L.; *c-album*, L.; *Progne*, Cram.; *Charonia*, Dr. (De l'Orza: probably in mistake for *V. Glauconia*); *Glauconia*, Motsch.; *Antiopa*, L.; *Io*, L.; *xanthomelas*, W. V.; *vau-album*, W. V. (De l'Orza: "intermediate between type and var. *V. j-album*, Boisd., Lec.").

*Pyrameis indica*, Herbst.; *cardui*, L.

*Junonia Lemonias*, L.; *Orithya*, L.

*Hestina assimilis*, L.

*Euripus japonica*, Feld. (*Diagoras*, Hew.); *Charonda*, Hew.

*Limenitis Sibylla*, L.; *Sydyi*, Led.; *Helmanni*, Led.; *Amphyssa*, Mén.

*Neptis Sappho*, Pall.; *Kæmpferi*, De l'Orza; *aceris*, Lep., var. *Eurynome*, Westw.

*Apatura Iris*, L. (of very doubtful occurrence in Japan); *Ilia*, W. V.; *substituta*, Butler, *Here*, Feld., ? varr. of *A. Ilia*.

*Libythea Lepita*, Moore.

*Nemeobius Lucina*, L. (quoted [in error?] by H. Pryer).

*Miletus Hamada*, Druce.

*Chrysophanus Phlæas*, L.

*Lycæna Argiades*, Pall.; *Argus*, L.; *Hellotia*, Mén.; *japonica*, Murray; *Argia*, Mén.; *Emelina*, De l'Orza; *Argiolus*, L. (= *L. Ladonides*, De l'Orza); *Pryeri*, Murray; *Lycormas*, Butler; *Arion*, L.; *Arcas*, Rott.; *Cyllarus*, Rott.; *Kazamoto*, Druce; *Euphemus*, Hübn.

*Thecla spini*, W. V.; *rubi*, L.; *cærulescens*, Motsch.

*Dipsas Attilia*, Brem.; *Taxila*, Brem.; *japonica*, Murray (? = *D. smaragdina*, Brem.); *orientalis*, Murray; *lutea*, Hew.; *sæpestriata*, Hew.; *arata*, Brem. (*Ichnograpia*, Butler).

*Satsuma ferrea*, Butler.

*Anops Phædrus*, Fabr.

*Amblypodia japonica*, Murray.

*Leucophasia amurensis*, Mén.

*Terias læta*, Boisd.; *Hecabe*, L., var. *Brenda*, Doubl., Hew., ? var. *suava*, Boisd.; *Mandarina*, De l'Orza.

*Pieris Daphidice*, L.; *napi*, L. ("The Japanese form is one-third longer in expanse of wing than the average size of British specimens." Butler); *rapæ*, L.; *brassicæ*, L., and var. (?) *crucivora*, Boisd.; *Melete*, Mén.; *Aglaope*, Motsch.; *Megamera*, Butler; *cratægi*, L.

*Gonepteryx rhamni*, L. (probably Japanese specimens should be referred to the next form); *Aspasia*, Mén.

*Colias viluensis*, Mén.; *Erate*, Esp.; *Hyale*, L.; *Simoda*, De l'Orza; *pallens*, Butler, *poliographus*, Motsch. (I cannot help thinking that these are all forms of *C. Hyale*).

*Anthocaris Scolymus*, Butler.

*Parnassius citrinarius*, Motsch. (*glacialis*, Butler).

*Papilio Polytes*, L.; *Helenus*, L.; *Dehaani*, Feld. (*japonica*, Butler); *Raddei*, Brem.; *Protenor*, Cram.; *Demetrius*, Cram.; *Alcinous*, Klug, and var. *Mencius*, Feld.; *Sarpedon*, L.; *Agamemnon*, L.; *Xuthus*, L.; *Xuthulus*, Brem. (probably the spring brood of *P. Xuthus*); *Machaon*, L. (perhaps the Japanese specimens should be referred to *P. Machaon*, var. *Hippocrates*, Feld.).

*Ismene Benjamini*, Guér., var. *japonica*, Murray.

*Pamphila guttata*, Brem., Gray; *pellucida*, Murray; *varia*, Murray; *vitrea*, Murray; *flava*, Murray; *comma*, L.; *Sylvanus*, Esp.

*Daimio Tethys*, Mén.

*Pyrgus maculatus*, Brem., Gray.

*Nisoniades montanus*, Brem. (*rusticanus*, Butler).

Beckenham : June, 1876.

*ASCALAPHUS KOLYVANENSIS* var. *PONTICUS* (an spec. distincta?).

BY R. M'LACHLAN, F.L.S.

Some time ago, I received from Dr. Staudinger a pair (♂ ♀) of an *Ascalaphus*, taken by him at Amasia (Asia Minor) during his sojourn there in 1875. These I had placed with *A. kolyvanensis*, of which I have many examples, from the Caucasus, Turkestan, &c.: but recently, upon re-arranging my collection, it became evident that this pair forms either a distinct local variety of *kolyvanensis*, or a good species. At present, I consider it better to adopt the former view, and describe it as:—

*ASCALAPHUS KOLYVANENSIS*, var. *PONTICUS*.

*Alarum posticarum macula pallida apicalis hyalina (nec flavo-opaca), annulus niger apicalis supra incompletus.*

The above brief diagnosis indicates the chief characters whereby this form differs from typical *kolyvanensis*:—that is to say, the black-ringed pale apical spot on the posterior wings is purely hyaline, instead of opaque yellow as is usual, and the ring itself is interrupted above, and thus incomplete. To these characters, might be added the form of the second (sub-apical) black spot in the anterior wings, which is irregularly quadrate, not concave on its outer margin, and with no extension towards the pterostigma: but, in a series of *kolyvanensis*, there are individuals in which this condition occasionally occurs.

In some respects this form is more distinct from *kolyvanensis* than is *Macaronius*, for this latter appears in reality only distinguishable by the yellow-veined black spots in the anterior wings.

Dr. Staudinger informs me that the insect was tolerably common at Amasia, and all the individuals were of the form above indicated. The pair before me are fully coloured and perfectly mature.

I might add that the South Russian *pupillatus*, although allied, has a good structural difference in the post-stigmatal area (setting on one side the difference in markings), which is narrower, and with the cellules less distinctly triseriate.

It is, I think, evident that the gay species of the true genus *Ascalaphus* are subject to local variation, parallel to that which is so common in butterflies; and, as in the latter, it is imprudent to multiply species where there are no structural differences. For instance, *A. ictericus*, *corsicus*, and *siculus*, may be only local forms of one and the same; the two latter are, I think, surely specifically identical.

In conclusion, I take this opportunity of noting that a second example (♀) of my *A. syriacus* is in my collection, and presents the same differences from *lacteus* as does the type (♂) in the British Museum; and, as an addition to the original diagnosis (Journ. Linn. Soc., Zoology, xi, p. 274), it should be noticed that the posterior wings of *syriacus* are narrower (less triangular) than in *lacteus*. This ♀ is rather larger than the typical ♂.

Lewisham, London :

23rd May, 1876.

*Diasemia literalis* in South Wales.—On the 2nd inst., having business in the hilly eastern part of the county, I started, after a drive of fifteen miles, for a walk round the neighbouring country. A footpath from one main road to another lay partly across an extensive pasture, the greater part being grass land with an abundance of *Lotus corniculatus* and other wild flowers, but a portion of one side being sufficiently marshy to support a full growth of rushes. The sun being hot, *Thanaos Tages* and other common butterflies were flying in plenty; the two pretty *Euclidia* sprang up from my feet to settle again at a short distance, and on the marshy ground a few *Melitæa Artemis* were flying lazily about, or settling on the buttercup flowers. Not having seen the last named species alive for some years, it aroused a slight feeling of vexation that I should have left my net at home under the impression that the day's travelling would be quite enough for the day's length, without any collecting.

Leaving this ground, and crossing a rivulet, the footpath led across another pasture,—dry and hilly, with the shortest possible herbage; and here, when half-way up the slope, a small moth started from my feet, and settling again a yard or two

away, revealed to my astonished gaze the lovely form and exquisite markings of *Diasemia literalis*. I had never before seen it alive, and the mixture of feelings—delight at the sight of so lovely a rarity, and vexation at having no collecting apparatus except a score of pill-boxes—may possibly be imagined. However, the beauty was not disposed to fly far, and, by a little patience and manipulation, it proved possible not only to box it, but to secure a specimen in each of the pill-boxes that I fortunately had with me. The moths were not very plentiful, and appeared to be confined to the very short grass and herbage on the slope of the hill, where they remained at rest until disturbed, and then flew but a short distance, often not more than three or four yards. They flew readily when disturbed at any time in the earlier part of the afternoon, both in hot sunshine and under clouds, even in spite of a moderate breeze; but I could not see any which appeared to fly of their own accord, and am disposed to think that the time of flight is towards evening. I could see no particular indication of their food-plant, unless it is grass, upon which they generally settled, appearing more especially attached to spots which were covered with the leaves of a very short bluish or glaucous grass or *Luzula* which was not in flower. At the foot of the hill, where the herbage was more rank, not a specimen could be found; and it seemed wonderful that the delicate creatures should exclusively frequent a spot so devoid of shelter that even *Crambus pratellus* ignored it, and the only species that interrupted the search for *literalis* was an occasional *Dicrorampha plumbana*.

The next morning, with two of the youngsters, I started early for the thirty-six mile drive, armed with plenty of collecting apparatus; but the weather had changed at last, the long-wished-for rain had come, and at ten miles from home we encountered a storm which sent us home again without unnecessary loss of time, and when, three days later, the weather moderated sufficiently, we found *literalis* getting sadly worn,—which, considering its habitat, was not surprising.

I see that this species is not entirely new to Wales, a specimen having been taken six years ago at Langharne, in the adjoining county, *at light* (E. M. M., vol. vii, p. 234). This may throw some illumination on its time of flight, though not much, seeing that the *Pyrausta* and *Ennychia* may occasionally be found in a similar situation.

As far as I can ascertain, *literalis* has been a rare insect for many years, the last important recorded capture that I can find being that by Mr. Reading (Intell., vol. ix, p. 18), who took two dozen specimens, on a sloping bank near Plymouth, sixteen years ago. I suppose it has disappeared from the ancient locality near Brockenhurst.—CHAS. G. BARRETT, Pembroke: 10th June, 1876.

P.S.—If any of my old friends and correspondents, who do not possess this species, will favour me with a line, I will endeavour to save them a type.

*Captures of Lepidoptera in East Sussex.*—On the 29th May, the Rev. T. W. Daltry, M.A., of Madeley, Mr. W. H. Tugwell, of Greenwich, and I, made a five days' excursion to East Sussex for the purpose of collecting *Lepidoptera*. Abbott's Wood and Eastbourne were the localities worked; and, considering the very cold weather there had been for some time previously, we were quite satisfied with the result of our expedition, over 100 species being observed, exclusive of *Micros*. My

own particular desire was to see alive the pretty *Agrotera nemoralis*; and, thanks to Mr. Tugwell, who knew the ground well, we were each enabled to take a series, though it was evidently very scarce compared with last year. Amongst the other species taken or observed, were the following: of *Diurni*, *Argynnis Euphrosyne* and *Selene*, in great abundance; plenty of hibernated *Gonepteryx rhamni*; *Syrichthus alveolus* was common in woods, as was also *Lycena Adonis* on the cliffs at Eastbourne; *Vanessa polychloros*, *Io*, and *cardui*, with others, occurred less commonly. Of the *Bombyces*, *Lithosia aureola* and *Chelonia plantaginis* were common, and *Nola cristulalis*, *Chelonia villica*, *Orgyia pudibunda*, and others, were taken, as were also *Lithosia quadra* (?), *Pæcilocampa populi*, *Lasiocampa quercifolia*, &c., in the larval state. *Geometrae* were numerous, and included, in more or less plenty, *Epione advenaria*, *Venilia maculata*, *Tephrosia consonaria* and *punctulata*, *Ephyra porata*, *omicronaria*, *orbicularia*, and *pendularia*, *Acidalia subsericeata*, *Coremia temerata*, *Strenia clathrata*, *Numeria pulveraria*, *Fidonia atomaria* (very much larger, and the ♀ quite different in colour to northern specimens), *Aspilates strigillaria*, *Emmelesia affinitata*, *Eupithecia plumbeolata* and *dodoneata*, *Lobophora hexapterata*, *Melanippe hastata*, *Coremia ferrugata*, *Eubolia lineolata*, *Anaitis plagiata*, &c., &c. *Platypteryx lacertula*, *falcula*, and *hamula*, represented their genus.

Owing to the almost complete failure of sugar (probably because of the cold, clear moonlight nights), but few *Noctuae* were taken; but those that did occur included *Cymatophora flavicornis* (larva), *Acronycta leporina*, *auricoma*, and *aceris*, *Xylophasia rurea* (var. *combusta*), *Apamea unanimitis*, *Taniocampa miniosa* (larvæ on oak) and *cruda* (larva), *Tethea retusa*, larvæ on willow, along with those of *Epunda viminalis*, *Agriopsis aprilina* (larva), *Hadena genista*, *Erastria fuscula*, *Amphipyra pyramidea*, *Phytometra ænea*, &c., &c.

*Herminia barbalis* was a most abundant representative of the *Deltoides*; and the *Pyrales* included (besides *nemoralis*) *Pyrausta ostrinalis*, *Herbula cespitalis*, *Ennychia octomaculalis*, *Botys flavalis* and *fuscalis*, &c. The *Crambites* were evidently not well out, as *Crambus chrysonuckellus* was the only species taken worth notice. We had no time to work specially for larvæ, or no doubt the list would have been greatly increased.—GEO. T. PORRITT, Huddersfield: June 9th, 1876.

*Gelechia humeralis* not uncommon in Perthshire.—Lately I received, in a box of insects for determination, from Sir Thomas Moncreiffe, five specimens of that variable species, *Gelechia humeralis*. Some of these specimens were so fine that I imagined they must have been taken before hibernation, and I therefore wrote at once for details, in hopes there might, perhaps, be some clue to the food of the larva of this insect.

Sir Thomas Moncreiffe replied: "The insect is very plentiful here. I have 'beaten it off every tree in the place, and it hibernates in numbers, in the thatch of 'an old summer house in my garden, appearing every fine winter's evening at dusk."

In a subsequent letter, he wrote: "I am afraid that I have no clue to the larval 'history of *G. humeralis*. Personally, I have either beat it off various trees, taken 'it in the neighbourhood of old thatch, or on the wing, but never on low plants or 'near the ground. I have taken it from August 10th to May 2nd. I have beat it 'off oak, birch, sycamore, poplar, &c., and it hibernates freely in the thatch (reed) 'of an old summer-house, and flies in winter and early spring at the *Cupressi*, along 'with the *Depressariae*. Of the five specimens I sent you" (and which Sir Thomas

Moncreiffe has very liberally added to my collection) "one was beaten from oak, April 14th, 1875; one from pine, August 10th, 1875; one from poplar, August 21st, 1875; and two I took on the wing, on the hill behind my house, in a mixed plantation, 500 or 600 feet above the sea level, on the 25th October last.

"When I said it was *very* plentiful here, I may have used a strong term, but I may call it plentiful, as I have always looked upon it as rather a pest, allied in that respect to *Cerostoma radiatella*, and I think, during hibernation, on a fine evening, I could fill from 12 to 20 boxes easily, and in the autumn am constantly turning it out of my net."

As I never yet had the pleasure of seeing the insect in my net, I can well concede the point that it must be really plentiful near Perth, and I trust that where it occurs so freely the larva will some day be found.—H. T. STANTON, Mountfield, Lewisham: May 19th, 1876.

*Four species of Helophorus new to Britain.*—It has been known, I think, for some time past, to most British Coleopterists, that a good deal of confusion has existed with respect to our native species of the genus *Helophorus*. I have lately been studying the group, and have enjoyed the great advantage of correspondence concerning it with Dr. C. G. Thomson, of Lund, in Sweden, who has kindly furnished me with types of several of his species, and has also examined several types which I submitted to him. I have now the pleasure of recording the addition of four species to our British list. Besides these, there is an insect in Mr. Rye's collection allied to (but I think distinct from) *æneipennis*, which I have not identified.

H. *ÆQUALIS*, Thoms.—Allied to *aquaticus*, Linn.; smaller, darker in colour; the sides of the thorax are less rounded, and its surface is less closely granulose; the interstices between the striæ on the elytra are narrower, the alternate interstices (especially near the margin) being hardly more elevated than the rest; the depression on the elytra behind the base (which is very evident in *aquaticus*) is hardly discernible; the 2nd joint (apparently the *first*, the real first being concealed) of the hind tarsi is a little longer, when compared with the 3rd joint, than in *aquaticus*; the apex of the last segment of the hind body is smooth on the under-side, whereas in *aquaticus* it is minutely serrated.

I have this insect only from Ireland. Mr. Rye has English specimens. It is probably in most collections, and not uncommon.

H. *PLANICOLLIS*, Thoms.—Allied to *æneipennis*, Thoms.; rather narrower, with the sides more parallel, the elytra being longer in proportion to the thorax; the thorax is (as the name implies) *flatter*, and is not longitudinally convex; it has, moreover, a very evident depression (almost a pit) just in front of the middle of the central channel; the femora are dusky black in the basal half (in *æneipennis* faintly darker at the *extreme* base); the punctures in the striæ on the elytra are very evidently finer and closer, and the interstices are flatter, and a little narrower.

This species does not appear to be uncommon in the mountainous districts of Scotland and Ireland, but I have not seen English specimens. I have it from Shetland.

H. *BREVICOLLIS*, Thoms.—An interesting little species, 1 line in length, allied to *granularis*, but distinguished by good characters: the apical joint of the maxillary palpi is narrower and longer, with only the extreme apex faintly dusky; on the thorax the intermediate sulci are only slightly bent, and the external sulci are not



parallel with the margin; the elytra are narrower and more pointed at the apex, and have the sides more parallel; the punctures in the striae on the elytra are evidently finer and closer, and the interstices between the striae are much narrower and more elevated.

The only British exponents of this species that I have seen are two specimens which occurred to me last year at Killarney.

*H. STRIGIFRONS*, Thoms.—A well-marked species, placed by its author at the end of the genus. It has, I think, a facies peculiar to itself. Dr. Thomson distinguishes it briefly from several widely separated species; but from its size, colour, and sculpture, it is (I think) incapable of confusion with any British species except *aneipennis* and *planicollis*. From both these species it may be distinguished as follows:—it is, on the average, a little *larger* (though small examples occur); the elytra strike the eye at once as more suddenly and strongly dilated behind the shoulders; they have, moreover, a broad reflexed margin, the space beyond the last striae being hardly, if at all, narrower than the widest interstice; the sides of the thorax are much more regularly rounded; the longitudinal fovea on the base of the head (which in *aneipennis* and *planicollis* widens out forwards) is uniformly narrow; the intermediate sulci on the thorax are less angulated, and the interstices of the elytra are distinctly elevated, the alternate interstices more so than the rest (those between the 2nd and 3rd, and between the 4th and 5th, striae are almost carinate). I notice also that the maxillary palpi are very long and massive. Besides the above distinctions, *strigifrons* differs from *planicollis* in having the punctures in the striae on the elytra much larger and not so close, and the femora of almost uniform colour.

This insect appears to be not uncommon in Scotland and Ireland, but I have not seen English specimens. I have no doubt it exists as an enigma in most collections.

I may, perhaps, be permitted to add that I hope to publish a sketch of the genus *Helophorus* in my "Outline descriptions of British Coleoptera" in the "Scottish Naturalist" next October.—THOS. BLACKBURN, Greenhithe: June, 1876.

*Note on an unrecorded British species of Helophorus.*—To the difficulties in this puzzling genus above mentioned, I must add yet another, representing a very marked species certainly not included in those recorded or mentioned by my friend Mr. Blackburn, and several of which have been taken by Dr. Power at or near Woking some years ago. This insect seems, from description, to be not improbably the *laticollis* of Thomson: it is readily distinguishable by its thorax being as wide as the elytra, convex, with narrow and shallow sulci, of which the two on each side of the middle one are but very slightly flexuous, and the outer one is parallel to the margin; by its elytra being not dilated behind the middle, but thence narrowed towards the apex, with very strong, almost crenate, striae, with narrow interstices; and by the long and sometimes entirely black apical joint of its maxillary palpi. It belongs to the "*aneipennis*" group, is  $1\frac{1}{2}$  lines long, and has bluish-metallic head and thorax, dark brown elytra, and light brown legs.—E. C. RYE, 70, Charlewood Road, Putney, S.W.: June, 1876.

*Notes on some species of Psyllidæ.*—*Psylla visci* was described by Curtis in his "British Entomology," vol. xii, p. 565 (1835), where he says that he bred it in the middle of May from larvæ found on mistletoe at Rougham (near Bury St. Edmunds).

Suffolk). The species is also stated by Foerster, in the "Verhandlungen des naturhistorischen Vereins der preussischen Rheinlande," Band v, 71, 4 (1848), to have been found on the mistletoe in Germany—the larva at Aachen, and the imago at Berghheim. In his work "Die Pflanzenfeinde aus der Klasse der Insecten," p. 293, Kaltenbach says he found the larvæ in March and April on the flowers of mistletoe, and that Herr Stollwerk took the imago on the same plant. I find no other notices of the insect, which is unknown to me, and as the mode of life has not been observed in detail, or at any rate not recorded, it would be of service to our native entomology if any one, who may have it in his power to get at the plant, would take the trouble to work up the life-history of *Psylla visci*. I believe all the species of *Psyllidæ* live for a considerable time in the perfect state, and so the month of July may not be too late to obtain the adult females and begin the work of investigation by observing the oviposition.

There are some other species of *Psyllidæ*, mostly first described by Foerster (*op. cit.*) as from England and Ireland, sent to him by Messrs. Walker and Haliday, but no precise locality, time of capture, or food-plant, is given (except the latter in two instances). Such are:—

*Psylla viridula*, Frst. (on nut-trees, Walker); *melanoneura*, Frst.; *costatopunctata*, Frst.; *picta*, Frst.; *æruginosa*, Frst.; *occulta*, Frst.

*Trioxa galii*, Frst. (on *Galium verum*, Haliday); *velutina*, Frst.; *abieticola*, Frst. (on spruce fir, and spindle-tree, Flor); *munda*, Frst. (on nettles, Flor).

*Aphalara flavipennis*, Frst.; *exilis*, Weber and Mohr (on *Rumex acetosella*, v. Heyden).

It is very desirable to re-find these in Britain; the time to obtain them in the adult state is from June to October, and, in looking for them, it is all but certain that other species, new to this country or to science, will be captured; the latter not improbably, because hitherto there have been very few collectors of *Psyllidæ* in particular. We know now about 40 native species; about 150 are recorded as European, but there are doubtless many more.

Some plants nourish more than one species of *Psyllidæ*, yet, as a rule, each species seems to be attached to the particular sort of plant (or allied plants) on which it stays; sometimes, however, they fly to others, and, of such as hibernate, many species are found together in autumn and spring among the foliage of fir trees. In the first instance, *Psyllidæ* may be expected to occur to collectors of insects of other Orders; but I hope that when an interest in them is awakened, and the fact known that the natural history of only a few species has been observed, they will be reared from the egg, and their development regarded by specialists, just as the *Lepidoptera* now are. In the imago-form, the *Psyllidæ* are easily taken from an umbrella or sweeping-net in small bottles containing a small portion of cut laurel-leaf, or chloroform, and are thus killed at once *in situ*, where they may remain for a day or two; they can then be set out on card with great facility. I would, at first, even excuse a Lepidopterist who would insist on pinning them, although by this treatment some of the markings on the thorax must be disfigured; by and by he would be converted to the method of fixing them on card by gum when he saw the manifest disadvantages of this plan in respect of the preservation and examination of his specimens. May I commend this neglected section of a neglected Order to the attention of some of our young Alexanders who are sighing for more worlds to conquer!

Among the species Foerster received from England, was *Psylla ulmi*, Linn., of which Linné, in the "Fauna Suecica," p. 262, says that it lives in the convoluted leaves of the small-leaved elm (*Ulmus campestris*), in company with *Aphides*. I have not found this species, but I do not believe it will be difficult to get.

The following species have not yet been found in Britain, but, their food-plants being common here, there is no reason why they should not enjoy, or endure, the hospitality of these islands.

*Psylla (Chermes) cerastii* is said by Linné (F. S., p. 262) to live on *Cerastium viscosum*, causing the terminal leaves to curve into monstrous ventricose forms. Dr. H. Loew, in the "Stettiner ent. Zeitung," viii, 344 (1847), described a *Psylla cerastii* as a new species, without referring to that of Linné of the same name; yet, although the food-plants are not the same, they are so nearly allied, and the appearances produced thereon are so similar, that the insects are probably the same species. Dr. Loew found his species at the end of June on *Cerastium vulgatum*. He says the deformation always exists at the end of a stalk, and consists in a shortening and thickening of the stem, and a diseased growth of the flower-portion: the calyx assumes a cap-like form, and is sometimes elongated nearly an inch; the flower-petals become foliaceous and green, are enlarged more or less, sometimes as much as four times their natural length, and take the most varied and irregular forms; the capsule swells into a bladder-shape, with an uneven surface, attains to three or four times its natural length, and the seeds within it shrivel. This remarkable malformation is caused by the broad, flat larvæ and pupæ of a *Psylla* which reside, either singly or several together, in the axils of the flower-buds, covered with white, flocky wool, which, however, does not adhere to their bodies. Then follows a minute description of the larva, pupa, and imago; and figures are given of the pupa and an upper-wing of the perfect insect.

*Psylla ixorophila*, Frauent., is said by Kaltenbach (*op. cit.*, p. 293) to have been found by him, in the pupa-state, at the end of April, and the adult insect was recognised as a species distinct from *P. visci*. This is worth investigation.

*Trioza flavipennis*, Foerst., was found near Pressbaum, in June, 1872, by Dr. Franz Löw (Verh. z.-b. Ges. Wien, xxiii, 141), on *Hieracium pilosella*, and he describes and figures the pupa. In July, 1869, he had found what he considers to be the same species on *Lactuca muralis* (a plant of the same natural order as *Hieracium*, growing on old walls and dry banks).

In different foreign publications, are notices of the habitats of other *Psyllidæ*, but the foregoing examples may suffice at present as incentives to work in a field in which a rich harvest is to be gathered.—J. W. DOUGLAS, Lee: 5th June, 1876.

POSTSCRIPT.—*Rhinocola aceris*, L. This, hitherto one of our scarcest species of *Psyllidæ*, I found last evening in profusion on a maple (*Acer campestre*) growing in an exposed situation by the sallow-pit at Lee. I had previously thrashed many maples growing in sheltered places without getting the insect. Linné originally found the species on *Acer platanoides* (not British); but Foerster took it at Aachen on the maple.—Id.: 13th June.

*A plague of spiders (Lycosa saccata)*.—One sunny day towards the end of March, strolling through Onchan Bay, near Douglas, a singularly-marked stone—

spotted as I thought—caught my eye, and I stooped to pick it up; as I did so, the spots—in the shape of several black spiders, which were sunning themselves on the flat surface—instantly slipped round the edge of the stone and disappeared amongst the loose shingle with which the shore is there covered. Mr. Meade has kindly determined the species to be *Lycosa saccata*.

I soon saw that spiders of the same species were everywhere around, sitting motionless on the stones, as far as the eye could reach, giving them a speckled appearance, as if there had been a shower of ink.

Now, I don't like spiders; I have an inherited antipathy to the race, and always remember against them the poet's description:

"Where gloomily retired,  
The villain spider lives, cunning and fierce,  
Mixture abhorred!" *Thomson's Seasons.*

But I stood still to watch this—to me—novel sight, although feeling slightly uncomfortable at finding myself in so much bad company. They seemed (for spiders) in an amiable frame of mind, and, so long as their legs did not touch, to be indifferent to each other's presence; but the slightest contact was resented, and, when it occurred, one or other, without combat, instantly quitted the field and disappeared round the edge of the stone. I believe all these well-behaved spiders to have been males, exhibiting themselves with a view to matrimony; but how they settled questions of precedence, or the right to occupy particular stones, I could not ascertain.

Occasionally, however, a different scene presented itself—an apparently accidental collision of the legs of two spiders occurred, when the pair instantly grappled and rolled together over the edge of the stone in a black ball. The sexes of *Lycosa saccata* do not differ much in size or appearance, and I could not distinguish them at sight, but I have little doubt that these pairs were composed of male and female individuals. I tried to intercept the fall of several couples, but, owing to the rapidity of the action, and the awkwardness of the situation amongst loose shingle, I failed to do so, or to find them afterwards. What I saw may only have been innocent coyness on the part of the lady-spider, but it seemed hard on the gentleman to be seized by his bride on the wedding-day and compelled to jump over a precipice, even in her arms.

I am unable to say whether the female *Lycosa* is in the habit of reversing the parts in the story of the Arabian Nights' Entertainment, and with not merely doing what the Sultan only threatened, but with eating him afterwards; but I noticed a great many empty spider skins amongst the shingle, and thought the circumstance suspicious, and the lady comes into court with a damaged character.

See De Geer's observation quoted by Kirby and Spence, vol. i, 1818, p. 280, and Darwin's "Descent of Man," vol. i, p. 339, that he "saw a male spider in the midst of his preparatory caresses seized by the object of his attentions, enveloped by her in a web, and then devoured, a sight which, as he adds, filled him with horror and indignation."

The number of spiders was so prodigious that I tried to make a rough estimate of them: the shingle bank, over the whole of which they were scattered, is about 250 yards in length by twelve yards in width—and I am sure I do not over estimate the number of spiders at ten to the square foot—which would give 270,000 in all! and Onchan is only one amongst hundreds of similar bays round the Isle of Man.

I suppose it was no affair of mine, but I then began to consider how this multitude of carnivorous wretches was fed. *Lycosa saccata* is a hunting species of spider; each individual insists on killing his own meat, and, like all hunting tribes, whether of man or beast, is no doubt wasteful of it; it spins no web, has neither storehouse nor barn, and takes no thought of a cold joint for the morrow, as the web-making species obviously do; a fellow-creature must daily die that each *Lycosa* may dine.

The peaceful-looking bay, sleeping in the sunshine, was, in reality, a scene of ruthless slaughter, and multitudes of happy, innocent beings were there daily put to the most cruel of deaths that spiders might live.

In the contemplation of the state of incessant war which reigns throughout nature, there is much to give rise to painful thought. I cannot here pursue the subject without trespassing on ground forbidden in your pages, but it is worthy of careful and thoughtful reflection; and blessed is he who even then can satisfy himself that he understands it.—EDWIN BIRCHALL, Douglas, Isle of Man: May 15th, 1876.

## Review.

DIE NEUROPTEREN EUROPAS, und insbesondere Oesterreichs, mit Rücksicht auf ihre geographische Verbreitung. F. BRAUER: Wien, 1876, 4to. Separat-Abdruck aus der Festschrift zur Feier des fünfundzwanzigjährigen Bestehens der k. k. zoologisch-botan. Gesellschaft in Wien, pp. 1—38 (or 265—300 of the entire work).

In this exceedingly useful work, Dr. Brauer (who may be termed one of the pioneers of modern Neuropterology) has brought together a List of all the described *Neuroptera* (in the Linnean sense) of the European Fauna, with the recorded distribution of the various species. The term "European Fauna," as here applied, signifies in reality the Palearctic Division of the globe, in the system of ornithologists, and comprises all Northern and Central Asia, Northern Africa, &c., &c.; a vast district of ill-defined limits, but yet infinitely better adapted to the investigations of the philosophical naturalist than is the Europe of our maps and atlases.

In round numbers, 1000 species are indicated by name. Of these, probably at least 100 may be taken as only synonyms: in other cases also, several species may be included under one name, and there are a few omissions; so that 1000 may still be near the truth as to the species *known* to inhabit this faunistic division. In making a more minute examination of the materials as comprised in groups, families, or sub-orders, it is evident that the so-called Order has been unequally worked in its constituent parts. Possibly the *Odonata* are the best known of all, and that it will be difficult to add to the hundred (or thereabouts) of *actual* European Dragon-flies. The *Trichoptera* are now undergoing revision. The *Ephemeroidea* have been revised up to a certain point. Other groups (more or less extensive) are tolerably well known. But there remain some in which little else than chaos still reigns supreme, and not the least important of these are the *Perlida*, the numerous species (with their possible local forms) of the genus *Hemerobius* as restricted, and the genus *Raphidia*. In fact, there is work enough for the concentrated energies of several entomologists. And it is additionally desirable that a thorough revision be made of almost all the European *Neuroptera*, because, on the other side of the Atlantic is a vast continent, with a fauna hardly to be grouped as forming a separate division from that

of the northern old-world, and which, in *Neuroptera*, is probably far more rich, and with numerous hard-working entomologists who naturally look to us of Europe for assistance.

We hail with great satisfaction this laborious work, which supplies a long-existing want. It forms part of a publication by the zoological and botanical Society of Vienna, in celebration of the 25th anniversary of its existence. A society so useful, and so flourishing, has just cause to be a little proud of such an event.

### Obituary.

*Edward Newman* died at his residence at Peckham on June 12th, after a short but painful illness. He was born at Hampstead, on May 13th, 1801, so that he attained the ripe old age of 75, thanks to a naturally strong constitution and extremely regular and methodical habits. With the events of his early life we are not well informed; but, before his 30th year, he was engaged in business on his own account as a rope maker at Deptford. Having, however, relinquished this business, he became a partner in a printing business at Ratcliff Highway, which soon passed entirely into his hands, and was continued by him in Devonshire Street until a few years ago, when the management was taken by his surviving son. In 1832, he commenced the first of a series of *Natural History Journals*, in connection with which he became so well known, and which undoubtedly have contributed to no small extent to foster and further a taste for *Natural History* in this country. Many naturalists, now old men themselves—men who have acquired fame in various branches of natural science, can remember, when as mere boys, they tremblingly committed their first lucubrations to the tender mercies of the "Editor" of one or other of these journals. In 1832, Newman started, in conjunction with A. H. Davis, F. Walker, and Edward Doubleday, the "*Entomological Magazine*," which extended to 5 vols., and up to 1838. At about the same time, the *Entomological Society* was founded, and the Editors having failed in attempts to procure the memoirs read before the Society, for publication in their magazine, instead of in special "*Transactions*," it was probably found that there was not then room for two publications having so much in common, and the magazine ceased. In 1840, however, Newman started the "*Entomologist*," a monthly magazine at the price of sixpence, a bold stroke, which met with considerable success, and it was continued until the end of 1842, when it was announced that "the *Entomologist* under its present title will now cease;" and it was merged into its successor, the "*Zoologist*," which has continued uninterruptedly under his sole editorship from 1843 to the present time, a period of 33 years (a fact probably unprecedented in the annals of journalism), and presenting a vast accumulation of facts and observations on zoological subjects. Upon the announcement of the forthcoming appearance of our own *Magazine* in 1864, and after having made a naturally ineffectual attempt to obtain our printing, he revived the "*Entomologist*," which has continued up to now, *Entomology* having been divorced from other branches of *Zoology* in the pages of the "*Zoologist*," a step that we make bold to think did not act to the advantage of either journal. For some time, also, Newman was connected with the now defunct botanical magazine known as the "*Phytologist*." For a long time he was entomological editor of the "*Field*" newspaper; and also, for a short period, of a popular journal for young people, under the title of "*Young England*," though otherwise he had no interest in these publications.

We now turn to some of his most important special works. The first of these, published in 1832, was an essay intitled "Sphinx Vespiformis," an ingenious attempt to elevate the quinary system of classification enunciated by Macleay into a septenary arrangement, giving evidence of great originality, but, at the same time, very speculative in its nature. In 1835, he produced the "Grammar of Entomology," a popular exposition of the science, which, in 1841, was succeeded by a more extensive work under the title of "A familiar Introduction to the History of Insects," which again appeared in 1858 as "The Insect Hunters, or Entomology in verse," a very clever exposition of the first principles of Entomology, in the style of Longfellow's "Hiawatha." Two important works, also, are his "Natural History of British Butterflies," and "Natural History of British Moths" (the first appearing originally in "Young England"), and especially useful on account of the good and copious figures, though the letter-press is marred by a tendency to prejudices and crotchets, which, it is to be regretted, more or less characterizes all his writings, and some of which laid him open to the imputation that they were put prominently forward, more for the sake of creating controversy than from any thorough belief in them by their originator. In addition to these works, the series of pleasant and well-written "Letters of Rusticus" are supposed to have been by Newman, and the authorship was not disclaimed by him, though it is probable that he really acted more the rôle of editor than of author in this case, and that Dr. Kidd, of Godalming, was the real author.

To enumerate the special papers and notes by Newman spread through his journals, would require a volume. They are mostly entomological, but there are many on other branches of Natural History, for he was exceedingly versatile, and had an extensive knowledge of general natural science, not excepting Botany, especially ferns, on the British species of which he published a useful work, which has gone through several editions. In Ornithology, he edited Montagu's "Ornithological Dictionary."

During his long life, Newman made many friends, also, it is not to be denied, alienated some. He has gone from among us—let the past be forgotten! Let us remember only the abundant and indisputable good he has done in giving to aspirants in Zoology the opportunity of making known innumerable valuable observations that otherwise would have remained unnoticed. In the present rapidly advancing condition of Entomology as a science, it is impossible that there can ever be another Newman. He was elected a Fellow of the Linnean Society in 1833, and in 1853 and 1854 was President of the Entomological Society. Mr. Newman leaves a widow, one son, and two married daughters.

---

ENTOMOLOGICAL SOCIETY OF LONDON: 7th June, 1876.—Professor WESTWOOD, President, in the Chair.

The following gentlemen were elected Members:—Messrs. Alex. Augustus Berens, A. H. Swinton, and Charles Marcus Wakefield.

Mr. Douglas reverted to the exhibition made by him at the meeting on the 3rd May (*vide ante*, p. 19), of the palm nuts known as "vegetable ivory," attacked by a species of *Bruchida*. He read a letter from a friend concerning the damage done to the nuts by the beetle, and asking whether it commenced on board ship, or

before loading. It was suggested that the mischief was initiated by the parent beetle laying her eggs in the nuts when still in a green and soft state. Many larvae infested each nut, reducing it to a rotten state. The metamorphosis took place in a cocoon inside the nut, and specimens of the beetle were shewn, proving to be a species of *Caryoborus*.

Mr. McLachlan, in connection with the above exhibition, placed before the meeting the nuts of another species of palm (*Copernicia cerifera*) from Rio, forwarded to him by Prof. Dyer, and likewise infested by a species of *Caryoborus* (alive when he received them), which, according to the British Museum collection, is *C. bactris*. In this case each nut served as food for only one larva, which bored in it a cylindrical hole of considerable size and depth.

Mr. E. A. Fitch exhibited seeds of a (probably) Leguminous plant from Egypt, forming an article of commerce, infested by a *Bruchus* to so great an extent that it was estimated that a loss of 50 per cent. was occasioned.

Prof. Westwood exhibited the larva of an Australian species of *Hepialus* (probably from Queensland) which had a long fungus, with four or five branches, growing out of the back of the neck and from the tail; also the pupa of a British *Noctua* with a fungus proceeding from the back of the neck.

Mr. Fryer exhibited a curious variety of one of our *Geometridæ*, believed to pertain to *Melanippe rivata*.

Mr. McLachlan, on behalf of Dr. Atherstone, of South Africa, exhibited sundry insects and insect-productions from that quarter. First, a couple of a very singular Orthopterous insect of considerable size (belonging to the *Acrydiidæ*), which, in colour, and in its granulated texture, so exactly mimics the sand of the districts in which it occurs as to render it almost impossible to detect it when quiescent. There was some doubt as to the species to which it should be referred, but it approached an insect noticed by Walker as *Trachyptera scutellaris*. Secondly, singular oval flattened cases (open at each end by a slit) from six to eight lines in length, formed of silk, to which was externally fixed a quantity of fine light brown sand. The cases were formed under stones in sandy districts, and were stated by Mr. C. O. Waterhouse to pertain to a beetle of the genus *Paralichas* (Fam. *Dacillidæ*). Lastly, the case of a species of *Ceciticus*, of peculiar structure. The inner lining of the tube was composed of toughened silk as usual, but to this was attached externally a quantity of fine sand, and outside this a number of small angular pebbles, only the tail end having a few rather long twigs and pieces of grass-stem: thus, the case differed from those of most species, in which exclusively vegetable substances are attached externally: the addition of the pebbles made the case (which was nearly two inches in length) unusually heavy.

Professor Westwood read descriptions and exhibited drawings of two very singular forms of Coleopterous insects from Mr. A. R. Wallace's private collections. For the first, which belonged to the *Telephoridæ*, he proposed the generic term *Atychina*, remarkable for the form of the two terminal joints of the antennæ in one sex, which were modified into what appeared to be a prehensile apparatus. The other pertained to the *Cleridæ*, and was termed *Anisophyllus*, differing from all known beetles by the extremely elongated branch of the 9th joint of the antennæ.

Mr. Smith read "Descriptions of new species of Hymenopterous insects from New Zealand, collected by Mr. C. M. Wakefield." The number of known *Hymen-*



optera appeared to be about 48. One species of *Siricida*, one of *Tenthredinida* (our well-known *Blennocampa adumbrata*; probably = *B. cerasi*, Hutton), only five *Formicida*, no *Mutillida* nor wasps, only a few bees, and some *Evaniida*, &c.

Mr. J. S. Baly communicated "Descriptions of new genera and species of *Halticida*."

Dr. Sharp communicated a "Description of a new genus and some new species of *Staphylinida* from Mexico and Central America," collected by Mr. Salvin, Mr. Flohr, and Mr. Belt.

## DESCRIPTIONS OF SOME NEW SPECIES OF *BUPRESTIDÆ* BELONGING TO THE GENUS *LIUS*, H. DEYROLLE.

BY EDWARD SAUNDERS, F.L.S.

The types of the species here described are now in the collection of the British Museum.

### I.—*Species elytris subrugosis*.

#### 1. CASTOR, *sp. n.*

*Obscure viridi-cyaneus, capillis albidis brevissimis obsitus, capite cupreomicante splendidissimo. Caput læve, inter oculos valde et triangulariter excavatum. Thorax punctatus, brevis, lateribus rotundatis, basi utrinque sinuatâ, in media lobatâ. Scutellum parvum, læve. Elytra fortiter punctato-striata, subrugosa, humeris valde prominentibus, lateribus sub-rotundatis, postice attenuatis, apice rotundato minutissime denticulato. Subtus nitens, punctatus.*

*Long. 2½ lin.; lat. 1½ lin.*

*Hab.: Parana.*

#### 2. POLLUX, *sp. n.*

*Obscure æneus, capillis albidis brevibus obsitus. Caput inter oculos excavatum, læve. Thorax sparse punctatus, lateribus rotundatis, basi bisinuatâ et in medio lobatâ. Scutellum parvum, læve. Elytra dense et rugositer punctata, humeris tuberculoque laterali prominentibus, lateribus sub-rotundatis, postice attenuatis, apice rotundato. Subtus lævis.*

*Hab.: Parana.*

*Long. 2 lin.; lat. 1 lin.*

*A L. Castore differt colore, præsertim capitis, capite minus excavato, et elytrorum rugositate.*

### II.—*Species elytris punctatis aut punctato-striatis*.

#### 3. ADONIS, *sp. n.*

*Cyaneus; capite, thoracisque angulis anticis purpureis; subtus niger. Caput inter oculos excavatum, punctatum. Thorax glaber, minute punctatus, lateribus rotundatis, basi valde lobatâ. Scutellum parvum, læve.*

*Elytra sparsim minute punctata, punctisque majoribus in lineis dispositis notata, lateribus rotundatis, postice attenuatis, apice sub-rotundato denticulato.*

*Long. 2 lin. ; lat. 1 lin.*

Santarem ; H. W. Bates.

4. *ARES, sp. n.*

*Cyaneus, subtus niger. Caput inter oculos valde excavatum, punctatum. Thorax glaber, minute punctatus, lateribus antice emarginatis, postice rotundatis, basi lobatâ. Scutellum parvum læve. Elytra punctata, punctis in lineis dispositis, lateribus sub-rotundatis, postice attenuatis, apice sub-rotundato.*

*Long. 2 lin. ; lat.  $\frac{1}{2}$  lin.*

Santarem, Ega, Para ; H. W. Bates.

*A præcedente differt oculis magis prominentibus, capite inter illos magis excavato, elytrorum punctis, et formâ angustiore.*

5. *TEREUS, sp. n.*

*Suprà viridi-cyaneus, subtus æneo-niger. Caput punctatum, inter oculos sulcatum. Thorax punctatus, lateribus sub-rectis, basi lobatâ. Scutellum læve. Elytra striato-punctata, lateribus antice sub-rotundatis, postice ad apicem attenuatis, apice denticulato. Subtus punctatus.*

*A præcedente nec non congeneribus differt oculis non prominentibus, thoracis lateribus sub-rectis et formâ sub-complanatâ.*

6. *CYCNUM, sp. n.*

*Viridi-cyaneus, subtus cyaneo-niger. Caput punctatum, inter oculos late sulcatum. Thorax punctatus, præsertim prope angulos posticos, lateribus sub-rotundatis, basi in medio valde lobatâ. Scutellum parvum læve. Elytra irregulariter sed ad basin valde striato-punctata, prope latera sub-undulata, lateribus rotundatis, postice attenuatis, apice denticulato. Subtus punctatus.*

*Long. 2 lin. ; lat.  $1\frac{1}{2}$  lin.*

Hab. : Bahia.

*Quam L. Ares major et multo latior ; differt etiam elytris punctato-striatis, lateribus undulatis, et colore sub-viridi.*

7. *HERCULES, sp. n.*

*Nigro-cyaneus, subtus concolor. Caput punctatum, inter oculos valde sulcatum. Thorax fortiter punctatus, lateribus prope angulos posticos rotundatis, basi in medio lobatâ. Scutellum læve. Elytra striato-punctata, lateribus ante medium sub-rectis, deinde ad apicem attenuatis, apice rotundato. Subtus punctatus.*

Hab. : Brazil.

*Long.  $2\frac{1}{2}$  lin. ; lat.  $1\frac{1}{2}$  lin.*

*Maxima hujus generis species mihi cognita.*

8. *BACCHUS*, *sp. n.*

*Cyaneus, capite cupreo-splendente, subtus niger. Caput punctatum, inter oculos late sulcatum. Thorax punctatus, præsertim ad latera, his ante angulos posticos rotundatis, basi in medio lobatâ. Scutellum læve. Elytra punctata, punctis in lineis dispositis, lateribus antice sub-rotundatis, postice ad apicem attenuatis, apice rotundato denticulato. Subtus punctatus. Long. 2 lin.; lat. 1 lin.*

Hab.: Ega, H. W. Bates.

*Colore L. aculeato, L. & G., similis, sed forma angustiore, elytrisque haud striatis differt.*

9. *HELIOS*, *sp. n.*

*Aureo-cupreus, splendidissimus, capite, thorace, apiceque elytrorum aureis; subtus niger. Caput sparse punctatum, inter oculos sulcatum. Thorax punctatus, lateribus antice sub-rectis, prope angulos posticos rotundatis, basi in medio lobatâ. Scutellum læve. Elytra striato-punctata, lateribus antice sub-sinuatis, postice attenuatis; apice rotundato. Subtus punctatus. Long. 1½ lin.; lat. 1 lin.*

Hab.: Ega, H. W. Bates.

*L. ignito, L. & G., affinis, sed valde distinctus.*

10. *OTUS*, *sp. n.*

*Caput, thorax et scutellum ænei, elytra cyanea, apice cupreo micante, subtus niger. Caput punctatum, inter oculos sulcatum. Thorax punctatus, margine anteriore angustâ, lateribus antice emarginatis, ad angulos posticos rotundatis, basi lobatâ. Scutellum parvum læve. Elytra fortiter punctata, punctis in lineis dispositis, humeris valde prominentibus, lateribus antice sinuatis, postice ad apicem attenuatis, apice denticulato. Subtus punctatus. Long. 1½ lin.; lat. ¾ lin.*

Hab.: New Fribourg.

*L. mærenti, L. & G., affinis, at thoracis et capitis colore, thorace punctato, formæque elytrorum distinctus.*

11. *EPHIALTES*, *sp. n.*

*Caput thoracisque obscure ænei, elytra cyanea, subtus niger. Caput punctatum, inter oculos leviter depresso. Thorax sparsim punctatus, lateribus sub-rectis, basi lobatâ. Scutellum læve. Elytra striato-punctata, humeris tumidis, lateribus sub-rotundatis, ad apicem attenuatis, apice denticulato. Subtus punctatus. Long. 1½ lin.; lat. ¾ lin.*

Hab.: Brazil.

*A præcedente capite vix sulcato, humeris vix prominentibus et elytrorum lateribus haud sinuatis differt.*

12. *Hades*, *sp. n.*

*Omnino cyaneo-niger. Caput tumidum, punctatum, inter oculos sulcatum. Thorax punctatus, lateribus antice sub-rectis, postice prope angulos leviter rotundatis, basi bisinuatâ et in medio lobatâ. Elytra striato-punctata, lateribus prope medium rotundatis, deinde ad apicem attenuatis, apice denticulato. Subtus punctatus.*

*Long. 2 lin. ; lat.  $\frac{7}{8}$  lin.*

*Hab.* : Santarem. H. W. Bates, Brazil.

*A congeneribus colore omnino cyaneo-nigro necnon capitis formâ differt.*

2, Spencer Park, Wandsworth :

June, 1876.

DESCRIPTION OF A NEW SPECIES OF *ECTEMNORRHINUS* FROM  
KERGUELEN LAND.

BY CHAS. O. WATERHOUSE.

*ECTEMNORRHINUS EATONI*, *sp. n.*

*Pyriformis, convexiusculus, niger, parce brevissime viridi-griseo-pubescentis ; capite rostroque longitudinaliter fortiter impressis, hoc brevi, apicem versus haud angustato, antennis nigris ; thorace capite paulo latiori, longitudine vix latiori, antice posticeque angustato, subtilissime coriaceo, subopaco, dorsim medio longitudinaliter carinato, postice utrinque obsolete tuberoso ; elytris ad basim thorace paulo latioribus, postice bene ampliatis, dorsim depressiusculis, distincte striatis, striis lateralibus obsolete punctatis, interstitiis planis, transversim subtilissime strigosis ; pedibus longis, femoribus basi piceis, medio inflatis, tibiis intermediis paulo curvatis.*

*Long. 2 $\frac{1}{2}$  lin., lat. 1 $\frac{1}{8}$  lin.*

This species is most nearly allied to *E. brevis*, C. Waterh., but is much less short, and has the shoulders of the elytra effaced. The thorax is distinctly carinate above, the forehead and rostrum are deeply and broadly impressed, the antennæ are rather slender ; the apex of each elytron is broadly and bluntly rounded, and rather expanded on the outer side (♀ ?) ; the femora are somewhat strongly inflated in the middle, the tarsi are rather narrower than in the other species of the genus, and the claw joint is very long.

NOTE.—I take this opportunity of correcting an unfortunate error into which I fell in describing the other species of Rhynchophorous *Coleoptera* from Kerguelen Land (Ent. Mo. Mag., 1875, Aug., p. 54). The species which I described as *Agonelytra longipennis* is the same as that described by my father some years ago under the name *Ectemnorrhinus viridis*, and placed in the vicinity of *Phyllobius*. In Lacordaire's 'Genera,' this genus, on account of the cylindrical structure of the abdomen, is placed near *Rhinomacer*, from which it differs in almost every other respect, and in the vicinity of which I did not for a moment think of looking for an insect with a well developed scape to the antennæ. Hence my error.

British Museum : 20th June, 1876.

#### NEW SPECIES OF LONGICORN COLEOPTERA FROM NEW ZEALAND.

BY H. W. BATES, F.L.S.

The following descriptions of nine new species of Longicorn *Coleoptera* from New Zealand raise to seventy the total number now known from these islands. Instead of having an extremely poor Coleopterous Fauna, as was originally supposed, it is becoming evident that, as far as concerns number of species, the country is not likely to fall far behind other insular regions of similar area and in similar latitudes. Many undescribed species of this family exist in private collections, and new species are continually arriving.

##### DIDYMOCANTHA EGROTA, *n. sp.*

*Elongata, gracilis, omnino pallide testacea, sparsim setosa, antennis undique pilosis, articulis 3-7 sequentibus longitudine fere equalibus; corpore supra grosse discrete punctato; thorace tuberculis duobus acutis lateralibus, anteriori minuto, instructo.*

*Long. 3-5 lin.*

Tairua, near Auckland (Capt. Broun).

Differs from the typical species in the proportions of the antennal joints 3-5; but agreeing in the double armature of the sides of the thorax: the 3rd to 7th joints are linear and nearly equal in length, the 4th being a little the shortest. The surface of the thorax is free from tubercles, and is covered with large punctures except along the dorsal line. The body is glabrous, except for the scattered long hairs; the antennæ are densely pilose.

*ASTETHOLEA LEPTUROIDES*, *n. sp.*

*Elongata, fusco-castanea, palpis pedibusque flavotestaceis; supra lavis, glabra, sericeo-nitens; thoracis medio angulatim dilatato, elytris via striatis, interstitiis nonnullis paulo elevatis.*

*Long. 4 lin.*

Canterbury (Mr. Wakefield).

Distinguished from *A. pauper* by its dark castaneous colour, and by the absence of distinct punctures on the elytra. The head is of the same rounded form, flattened in front and very broad between the eyes and base of antennæ; but the thorax is decidedly broader and perfectly smooth. The elytra have very shallow striæ without visible punctuation, and some of the interstices are elevated, but the apical portion is perfectly smooth.

*XYLOTOLES BULLATUS* (Sharp MS.), *n. sp.*

*Elongatus, sub-cylindricus, cinereo subtiliter sparsim, elytris maculatim, vestitus; antennis pedibusque testaceo-viridibus; thoracis medio convexo; elytris basin versus punctatis, tuberculo utrinque centro-basali elongato valde elevato; antennis infra sparsim setosis, articulis apice fuscescentibus.*

*Long. 2 lin.*

Tairua, near Auckland (Capt. Broun).

More slender in form than the typical species of the genus: the elytra have distinct shoulders, but are scarcely broader than the middle part of the thorax. The ashy vestiture appears to be very variable in pattern, in one of the specimens before me being arranged on the elytra in longitudinal rows of spots, and in another forming two ill-defined fasciæ, one before the middle, oblique, and the other sub-apical, transverse. The centro-basal tubercles are prominent and smooth.

*XYLOTOLES PICTULUS*, *n. sp.*

*Angustus, subcylindricus, castaneus, nigro-plagiatus, nitidus, thoracis limbo maculisque utrinque elytrorum duabus albo-tomentosis; elytris humeris omnino rotundatis, apice conjunctim rotundatis, basi punctatis; femoribus tibiisque basi albo-testaceis.*

*Long. 1½ lin.*

Tairua, near Auckland (Capt. Broun).

A small and very distinct species. Integument glabrous, shining castaneous with black clouds on disc of thorax, and in the middle, and towards the apex of the elytra; scattered white tomentum clothes the sides of the thorax and forms three streaks on the elytra, namely, two elongate at the base, and one curved towards the apex. The body is slightly convex, but the base of the elytra is much depressed. The elytra are not wider than the thorax, and the shoulders are rounded off; the base has a few punctures, and there is a line of the same on each

side extending beyond the middle. The antennæ are half as long again as the body, and reddish-testaceous. The legs are pale testaceous, with the club of the femora blackish, and the apex of the tibiæ dusky.

*PSILOCNÆIA BROUNI* (Sharp, MS.), *n. sp.*

*Latiior, sublinearis, suprâ depressa; cinerea, subtus et elytrorum lateribus atrofuscis; thorace medio dilatato, elytris apice singulatim subacuminatis. Long. 3 lin.*

Tairua, near Auckland (Capt. Broun).

Rather larger and broader than *P. linearis*; the thorax especially differing in being somewhat abruptly dilated in the middle. The elytra are considerably depressed behind the scutellar region, and at the apex are singly subacuminate, or, in other words, briefly and very obliquely truncated from the suture outwards. The upper edge of the dark fuscous lateral streak is very flexuous, and much darker in colour than the rest of the streak. The antennæ are palish testaceous, speckled with fuscous, and are ciliated beneath.

*DISTEENA OBTUSIPENNIS*, *n. sp.*

*Elongato-trigona, atrofusca, cinereo tenuiter tomentosa; elytris basi elevatis, disco unicestatis, apice rotundatis, punctis magnis nonnullis lineatim digestis.*

*Long. 5-6 lin.*

Canterbury (Mr. Wakefield).

Distinguished from all the Australian species of the genus by the broadly rounded apex of the elytra. It differs from most of the species also by the simply but strongly arched presternum, the mesosternum retaining the usual form, namely, trapezoidal with vertical anterior face. The antennæ are blackish, with the bases of the joints 3-10 bluish-grey. The thorax is uneven, slightly tri-tuberculate on the disc, and armed on the sides with large tubercles ending in strong spines. The elytra rise abruptly at the base to a plane, greatly elevated above the thorax; their grey tomentum is spotted, and shows besides traces of two fasciæ of the dark ground colour. The legs are unicolorous, and clothed with long grey bristles, like the whole underside of the body. The upper surface has a more scanty clothing of erect bristles.

*HYBOLASIUS PEDATOR* (Sharp, MS.), *n. sp.*

*Oblongus, fusco-piceus, macula laterali thoracis ponetuberculum, fasciaque mediana elytrorum cinereis; antennis longe ciliatis; thorace tuberculo magno conico laterali, alteris duobus disci minoribus; elytris passim punctatis, punctisque nonnullis majoribus sparsis.*

*Long, 3 lin. ♂ ♀.*

Tairua, near Auckland (Capt. Broun).

Differs from the typical species of the genus by its large, conical, thoracic, lateral tubercles not terminating in a spine. It may be readily distinguished by the rounded patch of light coloured tomentum on each side, covering the hinder part of the lateral tubercle, and extending towards the base. The dorsal thoracic tubercles are transversely placed and not much elevated. The elytra have large, obtuse, centro-basal tubercles; they are variously spotted with ashy tomentum, which condenses about the middle and forms a fascia; the scattered large punctures or foveæ about the disc and apex are a good distinguishing character. The antennæ in the males are one-third longer than the body, clothed with long hairs beneath, dark pitchy in colour, with the 3rd and 4th joints much elongated.

**HYBOLASIUS WAKEFIELDI, n. sp.**

*Oblongus, breviter setosus, atro-fuscus, elytris ante medium cinereo-fasciatis, apicem versus fulvo-plagiatis; thorace tuberculo conico laterali, alterisque duobus disci transversis; antennis articulis basi pallide testaceis.* Long. 3-3½ lin.

Canterbury (Mr. Wakefield).

The thorax has a small and conical lateral tubercle, not terminating in a spine, and on its disc two small glossy transverse tubercles; the sides are clothed with sparse cinereous pubescence. The elytra have distinct compressed centro-basal tubercles crested with bristles; they are more densely clothed with pubescence than in *H. predator*, so that the punctuation is not conspicuous; behind the scutellar region is a broad, cinereous fascia, followed by an interrupted black belt, behind which is a large fulvous patch on the suture, and the disc behind has two or three raised lines. The whole insect is clothed with long grey hairs, especially conspicuous on the legs. The antennæ are ringed with pale testaceous, and their 3rd and 4th joints are only moderately elongated. The species has much the appearance of a *Pogonocherus*, to which genus *Hybolasius*, as well as the Australian genus *Hebescesis*, is very closely allied.

**HYBOLASIUS CRISTATELLUS, n. sp.**

*Minor, oblongus, longe setosus, fuscus, sparsim cinereo-pubescent, antennis pedibusque rufo-testaceis, illis articulis apice, his tibiis apice tarsisque nigris; elytris tuberculo centro-basali longe penicillato.* Long. 1½-2 lin.

Canterbury (Mr. Wakefield).

A small species; moderately convex and clothed with long, erect hairs, and irregular spots and patches of cinereous pubescence on a rufous-brown ground: in many examples the elytra behind appear more



rufous with indications of two black fasciæ. The thorax is cylindrical, with small, conical, obtuse, lateral tubercles. The centro-basal tubercles are conspicuous, owing to the long pencil of hairs with which they are crested. The legs are pale rufo-testaceous, clouded on the femora, and with the apex of the tibiæ and the tarsi black. The antennæ are slightly longer than the body, the 3rd and 4th joints considerably elongated, relatively; pale testaceous with the tips of the joints fuscous.

Bartholomew Road, Kentish Town:

July, 1876.

---

DESCRIPTION OF THREE NEW SPECIES OF *PAPILIO* FROM THE  
COLLECTION OF MR. HERBERT DRUCE.

BY ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

*PAPILIO TRAGICUS*, *n. sp.*

Velvety-black above. *Primaries* with five narrow bands, the first near the base, whitish, the others pale green, the second widest, the fourth and fifth abbreviated, not extending below the median nervure; two series of pale green spots uniting at the external angle, the inner or discal series being formed of six large spots, the outer or sub-marginal series of eight lituræ; several scattered sub-costal small pale green spots. *Secondaries* with a tapering interno-basal whitish streak; a pale green band crossing the cell and terminating just below it; four pale green apical sub-marginal lituræ; two carmine lituræ placed obliquely near the anal angle; tail rather long, slender, tipped with white. *Body* of the normal coloration above. *Primaries* below black-brown, external area paler, the bands and spots as above, but less greenish; a series of large dark brown spots between the discal and sub-marginal series of greenish spots. *Secondaries* below pale brown; basal area covered with large black patches or spots, three of which above the cell (in an oblique series), one within the extremity of the cell, and one on the first median interspace, are bordered inwardly with carmine; two obliquely placed, white-edged, carmine lituræ; two sub-marginal series of large black spots; ciliæ varied with white; tail as above. *Body* below white, blackish at the sides, with three slender longitudinal ventral black lines. Expanse of wings, 3 inches, 6 lines.

Zambesi.

Most nearly allied to *P. Philolaus*.

*PAPILIO AURIGER, n. sp.*

Allied to *P. Ucalegon* of Hewitson: above, much blacker in colour; the transverse white band extending rather farther above the median vein; wings below altogether blacker, with no trace of the tawny colouring; basal area of secondaries black, with a spot of golden-yellow at the base. Expanse of wings, 3 inches, 10 lines.

Gaboon.

*PAPILIO RHODIFER, n. sp.*

Wings elongated. *Primaries* grey, the base and borders, the veins and internervular streaks, broadly black. *Secondaries* black; a broad band of white across the outer half of the cell, interrupted by a black spot filling up the end of the cell, and an oblique sub-costal bar; four externally excavated or sublunate spots near the outer margin, the first and second white, irrorated with grey, and rosy at their inferior extremities, the third and fourth bright red, irrorated with grey internally; tail spatulate (wanting in the type). *Body* black, front and sides of collar red; abdomen red with a decreasing series of dorsal black spots. *Primaries* below as above, excepting that the discal area is white instead of grey. *Secondaries* below as above, excepting that the sub-marginal spots are redder. *Body* below black, with the sides and the hind margins of the abdominal segments rose-red. Expanse of wings, 5 inches, 4 lines.

Andaman Islands.

Allied to *P. Doubledayi*.

British Museum: July 5th, 1876.

*Note on Mr. Buxton's collections.*—Mr. E. C. Buxton, who brought home a large number of specimens of the genus *Callosune* (*Pieridæ*) from South Africa, was naturally anxious that some new species should be found amongst them.

He took them first to Mr. Labrey, who studied them carefully, but without success. He brought them to me for the same purpose, and with the same want of success. We could neither of us discover a new species. Mr. Buxton most generously wished me to incorporate them with my own collection, but I had no room for them. They are now at the British Museum, and in the care of Mr. Butler, who has discovered a multitude of new species.

I have just received a small collection of *Lycanidæ* from Singapore, kindly sent me by Mr. Buxton, which contains some of Mr. Wallace's rarest species in fine condition.—W. C. HEWITSON, Oatlands, Weybridge: July 6th, 1876.

*A few remarks on some Swiss Lepidoptera.*—For a brief time at the end of June and commencement of July, during the summers of 1872 and 1875, I was in

the Bernese Oberland : my health permitted me to do very little in Entomology, but it is perhaps a duty to record that little, and this leads me to send the following list of my captures with a few remarks on them to this Magazine.

*Papilio Machaon* and *Podalirius*, both tolerably frequent. One day I saw a fine ♀ *Podalirius* busily depositing eggs on a sloe bush.

*Parnassius Apollo*, common, especially so at Interlachen ; the mode in which this insect folds its wings in complete repose is very peculiar, they are quite as much closed as in an ordinary *Geometra*.

*Aporia crataegi*, most abundant.

*Pieris brassicae*. *P. rapae*. *P. napi* : above a certain elevation, the females of this species seemed to me to assume the form *bryoniae* as their typical condition ; about half-way between Frutigen and Kandersteg for example, the ♀ *napi* was no longer seen, but *bryoniae* was abundant ; at the Châlets of Spittelmatte I caught a pair, the male was exactly similar to our spotless spring form, the female was a dark *bryoniae* : nowhere did a dark male fall under my observation. These one-sided sexual varieties are certainly worth careful study ; they have their parallel in the normal state of some insects,—thus no one could doubt that the males of *Ocneria dispar* and *O. detrita* were congeneric, yet how complete is the change in the female *dispar* ; in some of the species of the genus *Anthocharis*, on the contrary, the ♂ alone deviates from the type. *P. Callidice*, Lämmeren glacier moraine.

*Anthocharis cardamines* and *Leucophasia sinapis*, both abundant.

*Colias Hyale*. *Gonepteryx rhamni*.

*Thecla rubi*. *Polyommatus Hippothöe* (L.), the specimens of this insect were small and rather dark, it occurred near Frutigen, near Thun, and again at the Giessbach.

*Lycæna Egon*, very plentiful. *L. Astrarche* : of this species, only one was taken between Frutigen and Kandersteg ; its only red spots are the three nearest the anal angle of the inferior wing, it approaches, therefore, very nearly to the aberration *Allous*. *Lycæna Icarus*. *L. bellargus*. *L. minimus*, most abundant ; at a small wet piece of moss by the path side, I counted, one hot day, fifty specimens, then, losing my reckoning, I gave up, but there must have been at least twice the number, all of this species within two or three square inches. *L. semiargus*, common. *L. Arion*.

*Limenitis Sibylla*, Giessbach, Interlachen.

*Vanessa comma*, one bad hibernated specimen at the Giessbach ; the next day I found the curious larva on nettle at Spiez. *V. polychloros*, larvæ and pupæ abundant. *V. Io*, larvæ at Lucerne.

*Melitæa Dictynna* and *Athalia*.

*Argynnis Euphrosyne*. *A. Dia*. *A. Aglaia*.

*Melanargia Galathea*, very abundant everywhere in the low lands.

*Erebia Medusa*, the typical form of this insect occurred in a wood near Spiez. *E. Ceme* : I had great opportunities of examining this insect, as it was abundant between Kandersteg and the Altels ; my impression is that the higher the altitude (speaking in general terms) the darker the insect, but this, from my specimens being mixed, cannot be verified ; the following forms may be noted :

1. Wings entirely black-brown, no ocelli. The darkest specimen has one faint red bordered ocellus on the reverse side of the inferior wing. Save in size and slightly in shape, these examples resemble *E. Manto* var. *Cæcilia* almost completely.

2. Wings black brown with two small ocelli, black, with white centres, in the upper wing, almost forming a double ocellus, a slight ring of red includes them both; the lower wing has one ocellus, the upper one in the band, this has also a very faint red border. These ocelli and their red margins are better marked on the inferior surface.

3. Wings dull brown with no black shade, the twin ocelli surrounded by a broader red margin; on the lower wing, three ocelli forming a band, each surrounded by a separate red margin. Judging from the short description in Mr. Kirby's "Manual," this seems to be the typical form. It was not, however, the most common.

4. Wings a dark rich umber-brown with a shade of black; upper wing with the twin ocelli in the usual place, and round them a somewhat quadrangular patch of red, below these another ocellus, also black, with a white eye, and with a faint margin of red around it; the lower wings with three ocelli, each in a red ring.

5. Similar to the last, but the red blotch in both the upper and under wings much larger, so that the patch containing the twin ocelli seems only separated from the red mark around the lower ocellus by a brown vein; and in the inferior wing, the red forms a submarginal band, divided into three parts by the veins. This form approaches *E. Stygne* very closely, which latter insect also seems to vary much; the brown is, however, richer and darker than in any specimen of *E. Stygne* that I have seen, the ocelli in the inferior wing of *Stygne* are larger and better marked, and also more visible on the under surface. In *E. melas* and *E. Nerine* the under surface of the upper wing is almost all red and not with a red blotch only as in *Ceme* and *Stygne*. Probably the forms described as 4 and 5 are the ♂ var. *Hippomedusa* of Dr. Staudinger's Catalogue, which he places under *Medusa*, but adds, "potius ad *Emen* referenda."

*Erebia lappona*, common on the plain of the Spittelmatt; its variation did not seem great. *E. athiops*, near Kandersteg. *E. Ligea*, common in all subalpine districts, as Interlachen. This insect has not the jumping flight of our *Janira*, as most *Erebiae* seem to have, but rather the sailing flight of *Pararge Megera*.

*Pararge Mæra*, common; in alpine districts an aberration with one white eye-spot instead of two in the ocellus of the upper wing was frequent. *P. Hiera*, local, but where found abundant, in a sheltered opening in the wood by the Gemmi pass, with *Argynnis Euphrosyne*.

*Epinephele Janira*. *E. Hyperanthus*.

*Canonympha Pamphilus*. *C. Arcanius*, var. *Satyrion*, common near Kandersteg, but not unstable and showing no approach to the typical form, being in fact a variety and not an aberration.

*Syrichthus Aloveus*. *S. malva* and aberration *Taras*.

*Nisoniades Tages*. *Hesperia Sylvanus*.

*Sphinx ligustri*, *Smerinthus populi*, Thun.

*Macroglossa stellatarum*, abundant. *M. bombylifformis* (broad bordered), Giessbach.

*Zygæna Erythrus*. *Z. filipendula*.

*Hylophila prasinana*, near Thun.

*Psyche plumistrella* (?). *Epichnopteryx* sp., plains of Spittelmatt.

*Porthesia chrysorrhæa*. *Bombyx rubi*, eggs, which developed larvæ of this species, on the Brienzer Grat.

*Harpyia vinula*, larvæ, Thun.

*Bryophila raptacula*, one specimen in the Hotel des trois Rois, at Basel.

*Mamestra leucophæa*, one in the Bär Hotel, Mühlenen. *M. oleracea*, Interlachen.

*Leucania comma*, rather darker than usual, Kandersteg.

*Cucullia verbasci*, larvæ, at the Giessbach. *C. umbratica*, Interlachen.

*Erastria deceptor*, wood at the bottom of the Stockhorn.

*Prothymia viridaria*, common on the plains of the Spittelmatt.

*Euclidia* Mi, var. *litterata*, common on the mountains, the inferior surface of this variety is very beautiful, quite white with dark markings. *E. glyphica*, very abundant.

*Acidalia perochraria*, near Thun.

*Venilia macularia*.

*Boarmia repandata*, Giessbach.

*Gnophos dilucidaria*.

*Psodos alpinata*, *P. quadrifaria*, plains of the Spittelmatt.

*Emuturga atomaria*. *Phasiane clathrata*.

*Scoria lineata*. The heavy *Lithosia*-like flight of this Geometer is very peculiar.

*Minoa murinata*. *Odesia atrata*, most abundant in the meadows.

*Lobophora sewalisata*, near Frutigen.

*Cidaria viridaria*. *C. turbata*, not rare near Kandersteg. How this splendid insect, with its feathered antennæ, could ever have been confounded by Stephens with *affinitata*, does indeed seem marvellous. *C. montanata*, var. *fuscocomarginata*; the first specimen which was taken by me was a great puzzle, as it happened to be more than usually dark. *C. ferrugata*, Kandersteg, common. *C. suffumata*, common, rather high up on the Gemmi pass, but passing away at that time (end of June); it seemed there very unstable and no two specimens were alike, some approaching the var. *piceata*. *C. cæsiata*, upper part of Gemmi path. *C. tristata*. *C. albulata*. *C. luteata*. *C. oblitterata*. *C. bilineata*. *C. incultaria*, common near Kandersteg. *C. literata*, near Kandersteg, two specimens, one in the Gemmi Hotel.

*Eupithecia rectangulata*, var. *nigrosericeata*. Some other *Eupitheciæ* were taken, but are not yet named.

*Hercyna Schrankiana*, *H. phrygialis*, plains of the Spittelmatt.

*Eurrhyncha urticata*, Brienzen.

*Botys octomaculata*. *B. cingulata*. Very curious to an English Entomologist is it to see such a number of black or nearly black *Lepidoptera*, as were to be met with in some alpine spots; in the plain near the Spittelmatt châteaux for example, *Psyche plumistrella* and an *Epichnopteryx* were abundant, *Psodos alpinata* and *P. quadrifaria* were common, *Hercyna Schrankiana* and *H. phrygialis* were in swarms, and *Botys octomaculata* and *cingulata* occurred there also,—eight nearly black insects; the flowers, *Viola calcarata*, *Dryas octopetala*, and *Primula farinosa*, with the bright blue *Gentiana verna* and *acaulis*, formed a strange contrast to the funereal hues of the *Lepidoptera*; the height is about 5850 ft.

*Botys cephalotis*. *B. fuscalis*. *Diasemia litterata*.

*Crambus uliginosellus*, in a marsh near Thun. *C. pratellus*. *C. margaritellus*; this species of *Crambus* is common in Switzerland, I took it near Thun and again at the Giessbach. Some years ago, I took in the autumn, two specimens, just above Bowness, of exactly the colour of the Swiss examples; but, usually, the English

*margaritellus* has a much less orange hue. Near the Altels, I caught one specimen of a magnificent *Crambus*, rather larger than *latistrius* and with somewhat similar markings, but more of the colour of *pinetellus*. The pill box containing it was, unfortunately, lost. *O. perlellus*, *Sciaphila Wahlbomiana*, *Cochylis lægana*, *Penthina rufana*, *P. striana*, *P. olivana*, *P. lacunana*, *P. cespitana*.

*Semasia aurana*, particularly abundant near Lucerne in some meadows on the road to Alpnach. Every umbelliferous flower seemed to have one or more upon it; in some the spots were confluent, forming, I suppose, the aberration *aurantiana*, Kollar.

*Steganoptycha fractifasciana*. *S. quadrana*. *Phosopteryx comptana*. All these three were common on the plains of the Spittelmatt; *comptana* was in swarms, and particularly partial to the flowers of *Dryas octopetala*.

*Dichrorampha plumbana*. *Tinea granella*.

*Lampronia praelatella*, common in many places, especially at the Giessbach, where strawberry leaves showing the old marks of the larvæ were frequent. Mr. Stainton says of one taken in a fir wood at the base of the Gemmi, "a very curious specimen, "having the extra-costal spot (the penultimate one), larger than the normal one. In "specimens with the two spots, the outer one is usually much the larger."

*Nemotois metallicus*, near Frutigen, Lucerne, &c.

*Hyponomeuta padella*, Lucerne.

*Plutella cruciferarum*, on the very highest point of the Gemmi pass, flying about amongst *Biscutella lævigata* as comfortably as in an English turnip-field.

*Gelechia distinctella* (?), Gemmi.

*Sophronia semicostella*, between Mühlenen and Frutigen.

*Hypocallia citrinalis*, not rare in the path to the Raufft at the Giessbach.

*Polygala chamæbuxus* was especially abundant there at that time in fruit.

*Glyphipteryx equitella*, amongst *Sedum* at Interlachen.

*Coleophora ornatipennella*, grassy meadow near Thun.

*Elachista pollutella*, on the plain by the chalets of Spittelmatt. This insect, which had never been taken in Switzerland before, was flying there as freely as *rufocinerea* might do in an English meadow, and also like it in the early twilight. I thought it at the time an Alpine form of *cygnipennella*.

*Lithocolletis populifoliella*, Thun, on *Populus canescens*.

*Micropteryx Anderschella*, common on umbelliferous flowers between Frutigen and Kandersteg. *M. aureatella*, in the fir-wood at the base of the Gemmi.

*Platyptilia gonodactyla*, amongst coltsfoot, near Frutigen.

*Mimaseoptilus coprodactylus*, common near Frutigen, and again at Kandersteg.

*Aciptilia tetradactyla*, near Frutigen, and again at the Giessbach.

The *Tortrices* in this list were kindly named for me by Mr. Barrett, and the *Tineina* by Mr. Stainton; it records altogether about three weeks of invalid work, and of course does not represent even the common insects which might be taken in that time; the weather was, also, in both cases, most unfavourable. There is one problem in Alpine Entomology to be solved, and that is how a simple pedestrian can bring back enough specimens for the use of himself and his friends; in many cases where insects were most abundant, a single pair were all I preserved.

In this list the names are those used in the Staudinger-Wocke Catalogue.—  
R. C. R. JORDAN, M.D., 35, Harborne Road, Edgbaston, Birmingham: July, 1876.

*Further notes on Lycana Argiolus.*—By way of supplement to my account of this species in the last No., may be mentioned further variations of the larva, which occurred amongst a recent brood, reared from eggs, and since brought successfully through to the pupa state, both by Mr. Hellins and myself.

Several individuals were olive-green, strongly marked with crimson on the dorsal region and along the sides, and deeply suffused with this colour on the thoracic segments, while in the midst of this suffusion there appeared a pale yellowish-olive semi-lunar patch, situated transversely on the back at the hinder part of the second segment.

Another variety was coloured with deep rose-pink on the three thoracic and the last three segments, while the middle segments of the body were light green.

The plain green varieties included individuals of greenish-yellow and others olive-green.

Some further enlightenment as regards the food of this species has been given me by Mr. G. F. Mathew, R.N., who kindly informs me that, on the 22nd of last June, some flowers of *Escallonia* were brought to him to look at, when on one of them was detected a larva of *Argiolus*, about a quarter grown.

No doubt, other food also will be found to have nourished this species, and thus a good deal of the old puzzle as to the appearance of the butterfly in localities where no holly grew is done away with.—WILLIAM BUCKLER, Emsworth : July, 1876.

*Description of the larva, &c., of Miana fasciuncula.*—For many years, this larva eluded all my attempts to find it, until I was befriended by the chance visit of a female moth to a small pot of *Aira cæspitosa*, which, for two years or more, had been standing in an upper window, generally open in fine weather; on this grass, she was obliging enough, some time in 1874, to deposit an egg, and in no other way could my good luck have occurred, as the pot of grass had not been used for anything during the year, but was kept in reserve against the possibility of being wanted at any time.

While watering the grass on the 23rd of April, 1875, I was surprised to see some of the blades much eaten, apparently by a lepidopterous larva; this set me searching, and at length I detected the larva cunningly hidden in the dry sheath of a stem which was drawn round it with a few threads just at the axil of a green blade, the greater part of the grass being dry; I saw at once this larva was that of a *Miana*, but one I had not before seen; and, as it seemed nearly full fed, I figured it next day, and tended it carefully.

It continued to feed very well till the 1st of May, and, on the 2nd, while about to supply earth to its cage, I found it had already spun itself up in a light silken cocoon, under three pieces of the grass, and attached firmly to the bottom of its cage. The moth, a male, emerged on June the 2nd.

The length of the larva was nearly  $\frac{1}{2}$  of an inch; it was slender and cylindrical, though tapering from the third segment to the head, which is small and rather flattened, tapering also a little from the eleventh to the end of the thirteenth segment. The skin is of tough consistence, finely and conspicuously wrinkled transversely, and rather glistening; the shining head is of a light brown colour, darker brown at the mouth; there is a light brown shining plate on the second

segment and another on the anal flap ; all the rest of the body having a ground colour of a pale and subdued flesh tint, rather inclining to greyish-ochreous ; the dorsal stripe, of a darker tint of this colour, is well defined on either side by a stripe of the pale ground ; next is a very broad stripe of pinkish-brown, followed by a narrow stripe of the pale ground, finely edged below with pinkish-brown ; another narrow stripe of the pale ground follows, and then a stripe composed of faint freckles of pale pinkish-brown, beneath which come the black spiracles ; on the sides of the second, third, and fourth segments are rather large brown, shining spots ; the anterior legs are pinkish-brown, the other legs tipped with light brown ; a fine soft hair proceeds from each of the brownish tubercular dots, which can only be seen with the aid of a strong lens.

The pupa skin is a little over  $\frac{3}{4}$ -inch in length, stout in proportion, the head and thorax rounded, and of about uniform bulk to a little below the wing covers, the abdomen tapering from thence to the tip, which is furnished with two diverging curved points, and surrounded with a few minute bristles ; the colour, mahogany-brown and glossy.—ID.

*Description of the larva of Nola albulalis.*—Length half-an-inch when at rest, longer when crawling ; width one-fourth the length, nearly uniform, thus giving the larva a short and stout appearance. Ground colour of two very distinct varieties : 1, pale yellowish-green ; 2, bright orange. Tubercles six, raised, on each segment, forming two rows on the dorsal area and two rows on each side, usually of the ground colour, but an intermediate variety of the pale yellowish-green larva occurs with the tubercles orange ; from each tubercle springs a tuft of long whitish hairs. Markings, confined to the dorsal area, consist of two rows of irregular black marks, which form, in some instances, well defined lines, and, in others, merely rows of dots, each row being placed between the dorsal and second row of tubercles ; the 7th and 11th segments possess a black band, which joins the two rows of markings together. These markings vary much in distinctness. Food plant, the dewberry. The cocoon is fixed to a dried culm of grass or twig, and is formed of silk interspersed with portions of grass or bark, and closely resembles the substance to which it is affixed. The imago emerges in about three weeks after the cocoon is made.—J. PLATT BARRETT, 34, Radnor Street, Peckham : July 12th, 1876.

*Note on the pendulum-action in flight of ♂ Hepialus humuli.*—The following observation is a very curious and interesting one, but I can hardly believe that it has not been before placed upon record : if it have, this will be a confirmation ; if not, further observations will no doubt be elicited. In crossing a meadow one evening, three weeks ago, I noticed *Hepialus humuli* ♂ swinging to and fro on the wing, as is its wont. I used to believe that the female moth was hidden where the male performed this at first sight meaningless operation ; and I have frequently looked for her, as well as for the ♀ of *H. hectus*, the movement of the ♂ of which species is that of a much more accurate pendulum than in the case of *humuli*. But my search was always in vain, though I think I have more than once taken a pair of *hectus* in cop. on the same tuft of *Aira* over which another ♂ was oscillating. Remembering how I had formerly failed to discover the object of this steady to and fro movement,



I stood and looked at several of the moths (as one does sometimes at a difficult problem), and then observed that they occasionally shifted their ground a few feet, so that their senses must be very obtuse if all the attention they appear to give to one spot is required merely to discover that it is barren. Whilst so pondering, a heavy moth, careering along in the wild manner of *lupulinus* or *velleda*, actually "collided" with one of the ♂ *humuli*, or at least touched it and settled on the grass, about a foot in front of it. The ♂ *humuli* immediately followed, and was at once paired with the stranger, which proved to be *humuli* ♀. I looked out on several following evenings, to repeat the observation if possible, but failed to do so. Though this is a solitary observation, I entertain no doubt that the female moth searches for and finds (? selects) the male by sight, which gives a good reason for the conspicuous appearance of the latter sex, and an explanation of its remarkably small antennæ compared with those of the "sembling" *Bombyces*, in which the male finds the female by an antennal sense analogous to smell.—T. A. CHAPMAN, Hereford : *July*, 1876.

*Another British example of Ebulea stachydalis.*—Among the eight examples of presumed *E. sambucalis* in my collection, I find one to be *E. stachydalis*, as defined by Zeller, and of its specific distinctness from the former there can, I think, be no doubt. This was taken by myself, many years ago, but when and where I cannot say. In the days when I collected British *Lepidoptera*, I adopted the plan in vogue, then as now, among our Lepidopterists, of not labelling my captures. Possibly, in any case, there are few who would think it necessary to indicate the locality of *sambucalis*.—R. McLACHLAN, Lewisham : *June*, 1876.

*Occurrence of Pachetra leucophæa near Ashford, Kent.*—I wish to place upon record the occurrence of this species here. I have not seen any notice of recent captures, and believe a well authenticated British example is looked upon with considerable interest. On the 7th of last month, I accompanied some friends to a wood in this neighbourhood, where we were occupied principally botanically. Just as we were about to leave, I saw a moth on the trunk of a birch tree very near the ground, which I felt sure must be *Pachetra leucophæa*, and which I have since corroborated as that species. It is a ♀, in perfect condition. Of course I tried to obtain ova, supplying it with grasses, but to no purpose; probably it had not been long out.—WILLIAM R. JEFFREY, Ashford : *July 11th*, 1876.

*Capture of Leucania ritellina in the New Forest.*—A specimen of this insect was taken at sugar, in September last, in the New Forest, by Mr. George Tate, who, however, remained in perfect ignorance of the importance of his capture till the species was recognised by a London entomologist. It has now been transferred to my cabinet.—J. G. ROSS, Bathampton, near Bath : *17th July*, 1876.

*Habits of Myrmedonia collaris.*—Among numerous insects collected from the detritus of inundations, I saw a fine *Myrmedonia collaris*; and, fearing that it might be destroyed by contact with the other insects in my bottle, I put it into a vase where by chance were some small twigs from an ant's nest, and half-a-dozen vigorous ants. In an instant afterwards I saw it seize with its mandibles an ant

which had come within range, and, notwithstanding the desperate efforts of the poor creature, it was hurried off under the *débris* which covered the bottom of the vase. At this time I was obliged to cease my observation, but the next morning, I recovered my *Myrmedonia* in a very lively condition; and, on examining the *débris* in its prison, I saw two ant-corpses, both of which had the abdomen separated from the thorax.

An analogous fact was observed last year by M. Lucante, of Lectoure, with *Myrmedonia canaliculata*; and M. Léon Bleuse, of Limoges, has informed me that, when searching among detritus, he saw a *M. canaliculata* run after an ant, which, not having time to escape, was seized and carried off; but circumstances did not permit M. Bleuse to pursue his observations further.—LOUIS MESMIN, Poitiers (from the "Feuille des jeunes Naturalistes," July, 1876).

*Capture of Tillus unifasciatus and Xylotrogus brunneus near London.*—On the 9th of this month, I detected a specimen of *T. unifasciatus* on some new oak palings in this neighbourhood; on the following day I took another; and on the 12th two more, and lost another; on the 15th I missed another, as it fell amongst the long grass and escaped; on the 17th I took two more. *Lyctus canaliculatus* was very abundant, and amongst them I detected seven specimens of the rare *Xylotrogus brunneus*. Is anything known in what trees these three species feed, as they evidently only come to suck the new wood, and frequently fly on and off very rapidly, as I found, to my misfortune? As the locality is close at hand, I visit the spot daily, morning and afternoon, but most have occurred in the morning. Although I have been on the look out for both these species for the last thirty-five years, I never took them before.—SAMUEL STEVENS, Loanda, Beulah Hill, Upper Norwood: July, 1876.

*Coleoptera in the Isle of Man.*—During June I noticed the following species here:—*Melolontha hippocastani*, *Cetonia aenea* and *aurata*. The two first-named have not, I think, been previously recorded as occurring in the Isle of Man, and the triad struck me as rather curiously illustrative of the connection, geographically and otherwise, of this island with the surrounding kingdoms.

*Melolontha hippocastani* is common in Ireland, but not, I think, either in England or Scotland. *Cetonia aenea* is as yet only found in Scotland, I believe. *C. aurata* is a very abundant English insect; but of rare occurrence, so far as my experience goes, in either Ireland or Scotland.

It has been said, in explanation of the well-known heraldic bearings of the Island (three legs joined at the thighs), that they represent the Manks with the toe of one foot spurning Ireland, the spur on the heel of the second kicking at Scotland, and the knee of the third leg bowing to England.—EDWIN BIRCHALL, Douglas, Isle of Man: July 10th, 1876.

*Occurrence of Dichroscytus rufipennis.*—Whilst searching for *Psyllidæ* on the 26th inst., I was much pleased to find this insect somewhat common on fir trees (*Pinus sylvestris*) at Eltham. I have hitherto considered it to be one of our scarce species, having only met with it on one or two occasions, and then sparingly. From what I could observe, it seemed to me to be mostly attached to the green cones.

The specimens captured were very tender, as though having just changed to the perfect form, and, confirming this supposition, the pupæ were in my net in some numbers.—JOHN SCOTT, 1, St. Mildred Terrace, Burnt Ash Hill, Lee, S.E.: *June 30th, 1876.*

*Capture of Aphalara nervosa, Först.*—This is an addition of some importance to the list of British *Psyllidæ*, which will very shortly be published in the Transactions of the Entomological Society; it is the species to which I there refer when comparing differences with my new *A. radiata*. I happened to see a single specimen taken by Mr. Douglas, who informed me he had recently beaten it from *Achillea millefolium* at Bromley. As soon as an opportunity occurred, I set to work in search of it, and, in one locality near here, I found it on the *Achillea* in profusion. A complete description of it, and other species yet undescribed, will shortly follow in an appendix to the paper alluded to; but, for the sake of aiding others to recognise the creature, I give a brief diagnosis. Entire insect green; elytra clear, transparent; nerves next the apex more or less broadly margined with brown or black.—ID., *June 30th, 1876.*

*Diagnoses of certain species of Psyllidæ which may be expected to occur in Britain.*—As the season is not yet too far advanced to look for many of the species belonging to this group which we know are natives, neither is it too late to try and add those of which I here give short descriptions, and which ought to be found in this country.

**TRIOZA JUNIPERI**, Meyer-Dür.—Vermilion. *Face*: lobes short, reddish-yellow. *Antennæ*: 1st and 2nd joints reddish, 3rd to 8th white or reddish-white, 9th brown, 10th black. *Elytra* pale testaceous, apex somewhat obtuse, nerves more or less red. *Legs* reddish-yellow.

This is a small species, and, as its name indicates, is to be found on the juniper. Perhaps those who may be "beating about the bush" for insects of other orders, would keep an eye open for this little beauty. I have a pair named by the author, who thinks that, from the shortness of the antennæ and the blunted apex of the elytra, it, with one or two others, ought to form a new genus, an idea which I cannot endorse.

**RHINOCOLA SPECIOSA**, Flor.—*Head* yellow, minutely and sparingly punctured with dark brown. *Antennæ* pale yellow, two terminal joints black. *Pronotum* dark brown. *Elytra* whitish, scarcely transparent, more or less thickly punctured with dark brown, the puncturing more or less confluent, and almost forming three transverse bands, placed one across the apex of the outer basal cell, another across the middle of the disc, and a third next the apex, first and last darkest; *clavus* with two patches along the dorsal nerve, and the apex of the inner basal cell punctured with dark brown. *Wings* milk-white, dorsal margin next the base punctured with dark brown. *Legs* pale yellow. *Thighs* more or less brownish or black. *Abdomen*: above, black, two or three of the segments narrowly margined with yellow.

The colour of and characters on the elytra bear a somewhat rough resemblance to those of *Aphalara exilis*; but the difference in form, and the stigma always con-

stant in *Rhinocola*, at once show their distinctness. According to Dr. Flor, to whom I am indebted for specimens, this species is not uncommon from June to August on dry hilly places, on heath.

*APHALARA AFFINIS*, Zett.—Deep black, dull. *Head* with scarcely discernible punctures. *Antennæ* yellowish-white, two basal and two apical joints black, apex of 2nd joint sometimes whitish. *Pronotum* much deflected; *mesonotum* on the sides at the base of the elytra generally yellow, brownish-yellow, or brownish-red, seldom black. *Elytra* almost clear transparent, with a very faint yellowish or yellowish-brown shade, sometimes darker at the apex than at the base; nerves clear, fine; nerve adjoining the apex of the clavus with a black spot at the dorsal margin. *Legs* yellowish-white; *coxae*, *fulora*, and *thighs*, brown or black, apex of the latter yellow. *Abdomen* black; genitalia of both sexes as in *A. polygoni*.

Found, Dr. Flor says, on moory meadows, also on *Pinus Abies*, from June to September. This is a species I do not possess, and the tree named, to which a large number of individuals of the various genera seem to be attached, I have rarely had an opportunity of searching.

*APHALARA ARTEMISIÆ*, Först.—Clear green; *mesonotum* sometimes with reddish-yellow streaks. *Antennæ* dusky yellow or green, 4—7 sometimes brown at the apex, 8th at apex, and 9 and 10 entirely, black; 1st and 2nd joints underneath frequently brown. *Elytra* white, almost transparent, with very minute black punctures frequently confluent, and sometimes so thickly disposed as to render the disc opaque. *Legs* green.

Förster says he received six ♀ from Dr. Scholz with the remark that he found them on sandy places at the base of *Artemisia campestris*, a rare plant in this country, and, according to Babington, only found on sandy heaths in Norfolk and Suffolk. Flor states that with him the insect was very common on dry mountain meadows and heath, as well as on *Artemisia*, from June to August. I only know this species from the descriptions of the authors cited; but it seems to me, from the latter's observation, that we ought to get it here. I shall be glad to see or hear of examples of any of the foregoing having been found, to enable me to add them to the continuation of my paper on the group.—*Id.*: July 5th, 1876.

*Notes on some species of Psyllidæ.*—Under this heading (p. 42 *ante*) I cited Kaltenbach with respect to *Psylla izophila*, "Frauenfeld." I could not find the name at the reference given to the "Verhandlungen," and the volume has no index of species; but I have since discovered that Kaltenbach was treble wrong. First, he puts "*exophila*" instead of "*izophila*" (the latter and correct name, however, is in the Index of his book); secondly, he has "Frauenfeld" instead of "F. Löw," as the author of the specific name; thirdly, he has "Verhandl. k. k. z.-b. Ges. Wien, 1862, p. 100"—the last should be "105." Dr. Franz Löw there described the pupa and imago, and figures are given on a plate. Of the pupa he found a single example only, at Vienna, 28th April, on a leaf of mistletoe, and it remained perfectly stationary thereon for eight days, when the imago was developed. He believes it is not the *P. visci* of Curtis, but his opinion that it is distinct is mainly founded

upon the insufficiency of Curtis's description (leider zu kurz beschriebenen). After all, therefore, there may be but one species, and, as I said before, the matter requires investigation. If the month of July should be too late to obtain examples matured in May, an examination of the mistletoe in August may possibly result in finding that there is a summer generation from which the spring brood comes.

*Psylla sylvicola*.—Under this name, M. Lethierry, in 1874 (Hém. Nord, p. 90), described a good and distinct species found in France and also in Britain. Herr v. Frauenfeld having long since described a *Psylla sylvicola* in the Verhandl. z.-b. Ges. Wien, xi, 170 (1861), it appears at first sight that M. Lethierry's specific name must be changed; but it may be retained, because v. Frauenfeld's species belongs to the genus *Trioxa* (cf. F. Löw, Verhandl. z.-b. Ges. xii, 107). It was found abundant on *Senecio nemorensis*, Lin., growing in the high woods of the Alpeck mountains, and is described as being one of the smallest of the *Psyllidæ*, only 1 mm. long, entirely pale yellow, except the prominent black eyes, the antennæ brown beyond the 5th joint, and the nerves of the transparent wings yellowish-brown.

Among the species which I noted (p. 41 *ante*) as desirable to re-find in this country were *Aphalara exilis*, Weber and Mohr, and *Aphalara flavipennis*, Först. I find that the former has been taken in some numbers by Dr. Power, and that the latter is accounted to be a synonym of *A. picta*, Zett., but it has been rare with us hitherto, and is still worth looking for. It is said to occur commonly in meadows on the continent, but the food plant is unknown.—J. W. DOUGLAS, Lee: *July 10th*, 1876.

ENTOMOLOGICAL SOCIETY OF LONDON: *5th July*, 1876.—Professor WESTWOOD, President, in the Chair.

Mr. Douglas exhibited the following *Psyllidæ* taken in the month of June, near Lee:—*Psylla* sp.?, possibly *betulæ*, Lin., Flor, on birch trees. *P. spartiophila*, Först., on broom bushes. *Aphalara venosa*, Först., new to the British fauna, now first identified as living on *Achillea millefolium*, it having only been taken casually by Foerster and Flor. *Rhinocola aceris*, Lin., on maples. *R. erica*, Curt., on heather.

The President said, with reference to this exhibition, he was glad to see that attention was directed to the interesting but neglected *Psyllidæ*.

The President exhibited a number of insects of several orders, delicately displayed and mounted on slides for microscopic purposes by Mr. Enock. Also some flower-stems of horse-chestnut, each with a longitudinal incision and eaten hollow by some insect, somewhat after the manner in which terminal shoots of fir trees are eaten out by the larvæ of *Retinia turionella*; and he was desirous of finding out what insect was the depredator, no means of identifying it remaining in the stems. He also exhibited specimens of *Coccus camelliae*, a scale insect, the females of which he had first described long since in the 'Gardeners' Chronicle,' and which were found on a young *Camellia* in his greenhouse. The females are of a flattened oval form, and emit a quantity of white waxy matter from the extremity of the body, which secretion is gradually pushed backward till it extends nearly half-an-inch, and has quite the appearance of the excrement of a small bird; the eggs are deposited within the secretion. The males had not been observed. He also exhibited a

number of specimens of a closely allied species, which he had recently received from the Rev. T. A. Preston, of Marlborough College, the females of which secreted the white waxy matter in the same manner as the former species. These specimens were found on the leaves of a *Euphorbia* forwarded to Mr. Preston from Kew, and on them were also found a considerable number of small semi-transparent oval scales, from the posterior extremity of which were protruded two very short white delicate filaments, which the Professor immediately recognised as the extremities of the two caudal setæ of the male *Cocci*, which had not then made their escape from their strange puparium; this they do backwards from beneath the hinder extremity of the scale, a mode of exit of the imago quite unique in the insect world, the wings being thrown, by the backward motion of the male, over its head! He also exhibited a drawing of the male and anatomical details magnified, and proposed the name of *Coccus euphorbiæ* for the species.

The President drew attention to the following works:\*

"Pinacographia. Illustrations of more than 1000 species of North-West European Ichneumonidæ sensu Linnæano." 4to. By S. C. Snellen van Vollenhoven. 2 parts, each with five coloured plates.

"Schetsen ten Gebruike bij de Studie der Hymenoptera." Oblong folio. By the same author. Part 1, Ichneumoniden; part 2, Braconiden; part 3, Pteromalinen; part 4, Proctotrupiden. Fourteen plates. Professor Westwood observed as follows:

"Entomologists are under great obligations to Dr. Vollenhoven for the excellent materials, contained in the two works mentioned above, towards the knowledge of the difficult tribes of the *Ichneumonidæ* and other minute groups of parasitic *Hymenoptera*. The second of these works consists of nearly 850 outline figures of the genera of these insects, published at a very low rate; whilst the first of them consists of coloured figures of a great number of species of various genera belonging to the same families, all the species of which were arranged by Linnæus under the generic name of *Ichneumon*. The outline figures are either copied from the most reliable works, such as those of Curtis, &c., or are original; whilst the coloured figures are entirely original, and worthy of Dr. Vollenhoven's well-known artistic talent. In many cases, the portions of the body exhibiting characteristic specific distinctions of the different insects are only represented, accompanied, however, by a number of full figures of other species. It is to be hoped that the author will meet with sufficient encouragement to induce him to continue his work."

Mr. Stevens exhibited a remarkable variety of *Coremia fluctuata* from Sevenoaks, on which all the ordinary markings were scarcely visible; *Coremia ligustraria* from Croydon; and, from the chalk hills in that neighbourhood, two examples of *Lycana Thetis* (*Adonis*), presenting small black spots on the posterior margin of the upper wings, a very uncommon aberration, and constituting, he thought, a local variety.

The following Memoirs were communicated:—Descriptions of a new genus and some new species of *Halticina*: by J. S. Baly, F.L.S. Descriptions of new genera and species of *Tenthredinidæ*, chiefly from the East Indies, in the collection of the British Museum: by P. Cameron.

The second part of the "Transactions" for 1876 was on the table.

\* See Zoological Record, ix, 1872, x, 1873, and xi, 1874.

DESCRIPTIONS OF SOME NEW GENERA AND SPECIES OF NEW  
ZEALAND COLEOPTERA.

BY D. SHARP, M.B.

(continued from page 28.)

TELMATOPHILUS NITENS, n. sp.

*Colore variabilis; rufo-testaceus, elytris plus minusve infuscatis, maculis pallidis magnis quatuor: convexus, nitidus, fere nudus; thorace sat fortiter punctato; elytris minus subtiliter punctato-striatis, punctis apice obsoletis.* Long. corp. 2—2½ mm.

This species, though closely allied to *T. depressus*, is very distinct therefrom, by its more convex form, and stronger punctuation; it has also the legs and antennæ rather shorter and stouter. The colour is very variable, being sometimes reddish-yellow, with a dark band across the middle of the elytra, leaving a pale humeral, and apical spot on each; this dark colour extends sometimes so as to occupy entirely the elytra; and the prothorax is also, in such specimens, so much infuscate as to be nearly black.

Also a common species, I believe, about Auckland.

APHODIUS DISTANS, n. sp.

*Angustulus, parallelus, sat convexus, nudus, nigro-piceus, antennis pedibusque dilutioribus; capite mutico; prothorace transverso, elytris latiore, basi crebre fortiter, punctato, punctis anterieus magis sparsis; elytris crenato-striatis, humeris acute tuberculatis.* Long. corp. 4¼ mm.

Head very convex, finely punctured without any traces of tubercles; clypeus much emarginate. Thorax greatly broader than long, in front a good deal broader than the elytra, narrowed to the base, which is as broad as the elytra; the surface is without depressions, but bears irregularly-distributed coarse punctures, which, on the middle of the front part, are almost absent. Elytra with nine striæ, each of which is punctured with large, but rather distant, punctures, and also with a series of punctures along the lateral margin. The scutellum is elongate and narrow. The middle coxæ are widely separated; the basal joint on the hind tarsus is as long as the hind spur.

Two individuals sent from Tairua by Captain Broun; they are no doubt the two sexes, for in one of them the pygidium is a good deal more inflexed, and the apical ventral segment shorter in the middle, than in the other.

APHODIUS SUSPECTUS, n. sp.

*Angustulus, parallelus, sat convexus, nudus, piceus, nitidus; prothorace transversim quadrato, elytrorum latitudine, fortiter punctato; elytris fortiter striato-punctatis, humeris haud acutis.*

Long. corp. 4½ mm.

Very closely allied to *A. distans*, but rather smaller and shorter, and with the thorax less transverse; the striæ of the elytra are a good deal deeper, and their punctures are nearer to one another. Besides these slighter characters, the two species present some more important distinctions. The legs in *A. suspectus* are shorter, and the long spur of the hind tibiæ reaches as far as the apex of the 2nd tarsal joint; the shoulders of the elytra are not acute, and the middle coxæ are not so widely separated.

An individual of this species was sent me some years ago by Mr. Edwards of San Francisco, with the No. 1709 attached.

OBS.—This species and the preceding, though allied to the genera *Saprosites*, *Euparia*, and *Atenius*, will not at present satisfactorily accord with any of them. I think, however, for the present, they may be best placed in *Saprosites*, which is rather vaguely characterized by Redtenbacher. The *Oxyomus exsculptus* of White is from his description probably a species allied to these two; it is not applicable to a *Proctophanes*, to which genus it is referred in Harold's Catalogue; a species of which genus occurs, however, in New Zealand. I have a third species allied to *A. distans* and *A. suspectus*, but much smaller and more deeply striated, which I suspect to be White's species; it is similar in size and form to our *Aphodius cæsus* (*Psammobius*), but is a little broader, and has the angles of the elytra very acute. According to Captain Broun it is found in the wood of *Sophora tetraptera*.\*

#### APHODIUS BROUNI, n. sp.

*Nigricans, convexus, minus elongatus, subopacus; antennis pedibusque dilutioribus; thorace transverso, angulis posterioribus fere nullis, crebre irregulariter punctato; elytris striatis, striis apice profundioribus, minus distincte punctatis.*

*Long. corp. 3¼ mm.*

Head impunctate except on the extreme vertex, quite without elevations; clypeus emarginate. Thorax strongly transverse, rather wider than the elytra, the front angles rounded and a little produced, the hind angles extremely indistinct and obtuse; the surface bears numerous rather deep, but not very coarse, punctures, which are irregularly distributed, and nearly wanting about the front; the surface is rather dull. The elytra are rather short, and bear each nine somewhat deep, but rather fine, striæ; they are deepest on the deflexed portion: the punctures these striæ bear are only indistinct; the surface is dull, but the interstices are not punctured. The legs are short, the tibiæ stout, the long spur on the hind ones reaching nearly to the apex of the 2nd joint. The mesosternum is densely and finely rugose so as to be very dull; the space between the middle legs is carinate.

\* Since the above was in print, I have received from Mr. Pascoe a specimen of what appears to me to be a third species of this group; it is very closely allied to *A. suspectus*, but is considerably larger, the punctures of the thorax are rather more numerous, and the striæ of the elytra, as also their punctures, are somewhat finer, so that the interstices are broader; the following diagnosis will characterize it:—

#### APHODIUS PASCOEI, n. sp.

*Angustulus, parallelus, nigricans, nitidus; prothorace transversim quadrato, elytrorum latitudine, fortiter punctato; elytris striato-punctatis, interstitiis latis, humeris prominulis, viz acutis.*

*Long. corp. 5½ mm. D. 8.*



Sent by Mr. Edwards and Captain Broun ; Mr. Edwards' specimen with the No. 1708 ; some of Captain Broun's individuals were indicated as found in the wood of *Sophora tetraptera*.

Obs.—This species is rather smaller than our European *A. biguttatus*, and somewhat similar in form thereto ; I think it may be placed in Harold's genus *Atenius* ; in many respects it resembles *A. distans* and its allies, but is very readily distinguished from them by the rugose mesosternum. It varies in colour, the elytra being sometimes obscure red.

### PYRONOTA.

Only one New Zealand species (*Melolontha festiva*, Fab.) of this genus is at present recognised ; the *P. refulgens*, Bois., which is in the Munich Catalogue referred to New Zealand, being, according to Burmeister and Lacordaire, an inhabitant of New Guinea ; while *Melolontha læta*, Fab., is generally considered to be a mere variety of *M. festiva*. Though I cannot speak positively as to this latter point (having only one specimen which I can consider to be Fabricius' *M. læta*), yet I am able to say that several species exist in New Zealand closely allied to one another, and I think I distinguish four distinct forms.

1. The form which is commonest in collections is, I believe, Fabricius' *M. festiva* ; it is sent commonly from Auckland, and is 8 or 9 mm. in length ; it is above of a beautiful pale green, somewhat metallic colour, has a well-marked stripe on the middle of the thorax and along the suture of the elytra, of a fuscous colour, and a rather paler stripe near the lateral margin of each wing case ; the under-side is reddish, the legs and antennæ yellow, the club of the latter black. In the male, the club of the antennæ is about three-eighths of a line in length ; the front tibiæ are broad and curved, and their apex (or apical tooth) is broad and much turned outwards ; the basal joint of the tarsus very long, and inserted far up the tibia.

#### 2. PYRONOTA EDWARDSI, n. sp.

*Supra minus læte viridis, cupreo-fusco refulgens, subtus fusca ; sine lineis obscurioribus, sed sutura cupreo refulgente.*

*Long. corp.*  $6\frac{1}{2}$ —8 mm.

*Mas, tibiis anterioribus angustulis, rectis.*

This form differs from *Melolontha festiva* by its more obscure colour, comparatively rather shorter and broader form, by the absence of stripe on the thorax, and by the metallic suture, and absence of the intra-marginal lateral stripe of the elytra ; and by the differences in the male characters. In that sex the club of the antenna is rather longer than in *M. festiva* ; the front tibia is more slender, and is straight ; the apical tooth is slender and very little directed outwards ; the basal joint of the tarsus is short, and inserted near the apex of the tibia.

The only specimens I have seen of this species are fourteen in number, and were sent me, with other interesting New Zealand insects, by Henry Edwards, Esq., of San Francisco, after whom I have named the species. These specimens vary very little *inter se*, and the male characters are exactly similar in the four specimens of that sex.

3. PYRONOTA SOBRINA, *n. sp.*

*Suprà opalescens, subtus rufescens, thorace vitta dorsali elytrisq[ue] sutura fuscis.*

*Long. corp. 6½—7 mm.*

*Mas, tibiis anterioribus latiusculis, rectis.*

This species is of a peculiar opalescent colour; and is readily distinguished from the two species I have already named by the structure of the male tibiæ and tarsi, which, in some respects, are intermediate between those of the other two species. In that sex the club of the antenna is rather long; the front tibiæ are short, but rather broad: they are very little curved; the basal joint of the tarsus is rather short, and inserted at a moderate distance from the extremity.

Three male individuals labelled "Taranaki," and bearing the No. 1977, were sent me by Mr. Edwards, and are the only specimens I have seen. In one of them the thoracic stripe is very indistinct, but the intra-marginal elytral stripe is pretty distinct, though it is nearly absent in the other two. The male characters are quite similar in the three specimens.

4. PYRONOTA MUNDA, *n. sp.*

*Suprà læte viridis, fere unicolor, elytrorum lateribus apicem versus plus minusve flavescens.*

*Long. corp. 9—10 mm.*

*Mas, antennarum clava elongata; tibiis tarsisque anterioribus fere ut in M. festiva, Fab., sed adhuc magis elongatis.*

This form is very close to *M. festiva*, but is rather more elongate, and is of a beautiful almost unicolorous green on the upper surface, and the club of the antennæ in the male is distinctly longer, and the tibiæ and tarsi are a little longer.

I received this species from Mr. Edwards, but only two males and a female; and I have also an individual from another source in my collection.

MENIMUS,\* *nov. gen. (Tenebrionidarum).*

*Antennæ breves, crassæ, clavatæ, 10-articulatæ.*

*Oculi parvi, vel minuti.*

*Tarsi subtus longius setosi, posteriores articulo basali haud elongato.*

Last joint of maxillary palpi securiform. Eyes small, or very minute. Thorax strongly margined at the sides, and with the hind angle very accurately adapted to the lateral margin of the elytra. Prosternum with a process projecting backwards, and meeting the front of the metasternum, there being no process of the mesosternum to receive it. Middle and hind coxæ slightly separated. Epipleuræ of elytra rather broad, and accurately fitted to the sides of the breast and hind-body. Tibiæ rather slender, unarmed, the apical spurs minute. Tarsi moderately long and slender, furnished beneath with rather long but scanty hairs, the basal joint of the hind tarsi stout or moderately long.

This genus seems to me to find a fitting place in the *Diaperides* of Lacordaire, near *Diaperis* and *Scaphidema*, from both of which the characters above mentioned readily distinguish it. I sent some specimens to Mr. F. Bates, who returned them as quite unknown, and expressed a doubt as to whether they belonged to the *Heteromera*; I think, however, that when he has an opportunity of examining the characters, he will probably be of my opinion.

**MENIMUS BATESI, n. sp.**

*Ovalis, sat convexus, sat nitidus, nudus, piceus, antennis pedibusque rufis; vage punctatus; oculis mediocribus; tarsorum posteriorum articulo basali sequentibus duobus æquali. Long. corp.  $4\frac{1}{2}$  mm.; lat.  $2\frac{1}{2}$  mm.*

Antennæ 1 mm. in length, reddish, stout, much thickened to the extremity, basal joint much concealed by the side of the head, and projecting but little beyond it, 2nd and 3rd joints short, 4th, 5th, and 6th short, not so long as broad, 7th broader than 6th, 8-10 forming a loosely articulated club, the 8th and 9th transverse, the 10th scarcely so broad as they are, rounded, and about as long as broad. Head distinctly and moderately sparingly punctured, not much shining. Thorax rather strongly transverse, the sides considerably narrowed towards the front, but scarcely curved, the surface rather shining, and finely and sparingly punctured. Scutellum short and broad, finely punctured. Elytra pitchy, with the extremity paler, rather finely and not closely punctured, the punctuation irregular, but sometimes forming the rudiments of striæ.

I have three specimens of this species, which were sent from Auckland by Mr. Lawson, and, I believe, other individuals were received by his brother. I think I also received the species from Captain Broun, and returned it to him as unknown to me. I have named this species in honour of Mr. F. Bates, to whom I am indebted for some information on New Zealand *Heteromera*.

**MENIMUS CRASSUS, n. sp.**

*Breviter ovalis, sat nitidus, nudus, nigro-piceus, elytrorum apice, antennis, pedibusque dilutioribus; vage punctatus, elytris parcius sub-punctato-striatis.*

*Long. corp. 3 mm.*

Closely allied to *M. Batesi*, but much smaller, and with the elytra shorter and more convex, and their punctuation more sparing, and more distinctly arranged in lines; the general characters are, however, very similar to those of the larger species.

This species was also sent by Mr. Lawson, from Auckland.

*MENIMUS CÆCUS*, *n. sp.*

*Oblongo-ovalis, sat convexus, nitidus, nudus, elytris tantum obsolete punctatis; oculis minutis; prosterni processu apice depressiusculo, minus producto.*  
*Long. corp. 2½ mm.*

At first sight, this would be thought a pale form of *M. crassus*, but examination shows it to be very different. The head is distinctly punctured, but the thorax is shining and impunctate, and the sculpture of the elytra consists only of some rows of very obsolete punctures. The form of the prosternal process and the abortive eyes will readily lead to the recognition of this species.

Four specimens were recently sent me from Tairua by Captain Broun.

*ARTHOPUS*,\* *nov. gen. (Tenebrionidarum).*

*Antennæ 11-articulatæ, clava triarticulata.*

*Palpi maxillares articulo ultimo haud incrassato, quam 3° duplo longiore.*

*Tarsi subtus parce pilosi.*

*Facies fere generis Phyllodectæ (Phytophagorum).*

Antennæ with the three apical joints thickened so as to form an elongate club. Maxillary palpi with their basal joint very small, 2nd short, slender at the base, broad at the extremity, 3rd slightly shorter than 2nd, about as long as broad, 4th joint about as broad as 3rd, quite twice as long as it, rather thicker in the middle than at the apex. Head rather small, inserted in the thorax as far as the prominent eyes, which are somewhat oval in form; insertion of antennæ not concealed, and quite contiguous with the eye. Front coxæ rather widely separated, the process between them not prolonged behind. Middle coxæ hardly more distant than the front pair, their trochantins visible; suture between meso- and metasterna very evident, extending just between the middle parts of the coxæ, the mesosternum in front of it obliquely declivous. Metasternum moderately long; hind coxæ separated by an almost pointed process, which projects a good way into a notch at the extremity of the metasternum. Hind body rather elongate. Epipleuræ of elytra rather narrow, except at the shoulders, but very accurately applied to the sides of the body. Tibiæ quite unarmed, and only a little incrassate at the apex: the tarsi simple on all the legs; furnished beneath with a fine but scanty pile; they are slender and of the same

width throughout all their length; the front and middle pair with the three intermediate joints very similar to one another, the basal joint longer than the 2nd; hind tarsi with the basal joint rather long, a little longer than the two following together, the second slightly longer than the 3rd, the last joint rather shorter than the other three together.

I sent a specimen of this insect to Mr. F. Bates, who returned it as quite unknown to him, and doubted whether it belonged to the *Tenebrionidæ*. It undoubtedly must be classed in that family, however, but I cannot indicate its exact position: I think it should be near the *Helopides*.

**ARTHOPUS BROUNI, n. sp.**

*Oblongus, sub-parallelus, transversim convexus, nudus, nitidus, niger, supra viridi-æneus; elytris fortiter punctato-striatis, punctis apice obsoletis.*  
*Long. corp. 5—6 mm.*

Antennæ rather longer than head and thorax, black, 1st joint moderately stout, 2nd not very short, 3rd elongate, 4th—8th each a little longer than its predecessor, 8th rather longer than broad, but scarcely thicker than the 3rd, 9—11 forming a long loosely jointed club, the 9th greatly broader than the 8th, quite as long as broad, 10th transverse, 11th obtuse, large, larger than any of the other joints. Thorax broader than long, rather narrower than the elytra, the sides sharply margined, the hind angles almost rectangular, the basal margin obsolete and quite wanting on the middle part, which is a good deal lobed; the surface is sparingly and somewhat finely but very regularly punctured. Scutellum rather small, acuminate, impunctate. Elytra with rows of rather coarse, somewhat distant punctures, which become obsolete at the apex; they are broadest at their base, and gradually and slightly narrowed towards the apex. Under-surface and legs deep black. Sides of the prosternum with rather distant, peculiar, raised punctures; sides of the metasternum with coarse, impressed punctures. Hind body shining, and impunctate.

. Sent from Tairua by Captain Broun recently, but only three mutilated individuals. I hope the arrival of other specimens will enable such an examination to be made as will settle the affinities of the species.

**LORELUS,\* nov. gen. (*Tenebrionidarum*).**

*Mentum parvum; palpi omnes conspicui.*

*Coxæ intermediæ parvæ, trochantinis nullis.*

*Tarsi articulo penultimo sub-lobato.*

Antennæ 11-jointed, with the three apical joints a little thicker than the others; their insertion very near the eye, which is moderately broad and not emarginate. Mentum quite minute, leaving exposed the base of the maxillæ; the process sup-

\* *Lo-rel-us*.—D. S.

porting it also very small. Last joint of maxillary palpi securiform. Front coxæ round, small and deeply embedded, separated by a narrow process, the apex of which is depressed and does not project behind. Middle coxæ small, deeply embedded, separated by a process of the flat mesosternum, outside each the mesosternum and metasternum meet together, and there is no trace of a trochantin. Metasternum rather long. Hind coxæ separated by an obtuse, not very broad projection of the 1st ventral segment. Hind body rather elongate. Epipleuræ narrow. Tibiæ quite unarmed and rather slender, their apices narrow, and not in the least thickened, but even rather more slender than the portion just above them. Penultimate joint of the tarsi excavate above, so that the apical joint is inserted at the upper side of its base; they are densely clothed beneath with a fine pile; the basal joint of the hind ones quite as long as the two following together.

This appears to be an extremely anomalous genus; it would appear that it cannot be satisfactorily placed in any of Lacordaire's groups; the structure of the coxæ would cause it to be referred to the first division of the *Tenebrionidæ* in his arrangement; but the structure of the tarsi is nearer to that of *Læna* and *Adelium*. I sent specimens to Mr. Bates, who returned them as unknown to him, and doubted their being *Tenebrionidæ*; of this, however, an examination leaves me no doubt.

LORELUS PRISCUS, *n. sp.*

*Sat depressus, elongatus, nudus, ferrugineus vel piceus, crebre sat fortiter punctatus; thorace elytris multo angustiore, sub-quadrato, antice truncato.*

*Long. corp. 4—5 mm.*

Antennæ reddish, shorter than head and thorax, rather stout; 1st joint short and stout, its insertion not visible from above, 3rd joint not elongate, but longer than any of the others, 4th rather longer than broad, 5th–8th each with the breadth differing but little from the length, 9th and 10th distinctly thickened and rather transverse, 11th rather large, even a little broader than 10th. Head narrower than the thorax, and not immersed in it up to the eyes, it is closely and moderately coarsely punctured, and the sides are a little thickened over the insertion of the antennæ. Thorax about as long as broad, distinctly narrowed towards the base, the front angles not prominent, and about right angles, the hind angles minutely prominent, the base not in the least lobed in the middle, its punctuation like that of the head. Scutellum rather short and broad, not punctured. Elytra evenly covered with rather coarse and close punctures, the punctures distinct at the apex, but not so coarse there as elsewhere.

I have received this species both from Captain Broun and Mr. Lawson; and believe it to be common in the Northern island; several individuals of it were included in a lot of beetles sent home by Captain Broun as found on one of the tree-ferns, *Cyathea dealbata*.

(To be continued.)

DESCRIPTION OF A NEW GENUS OF *ANISOTOMIDÆ*.

BY D. SHARP, M.B.

*DIETTA*, nov. gen. *Anisotomidarum*.*Frons emarginata, clypeo membranaceo.**Antennæ clavâ latâ 4-articulatâ.**Coxæ intermediæ valde distantes.*

Mandibles elongate (quite as long as the width of the head between the eyes), the left obsoletely, the right distinctly, toothed below the middle. Superior lobe of maxilla elongate and slender, with long hairs on the inner side; first joint of maxillary palpi very indistinct, 2nd rather long, 3rd a good deal shorter than 2nd, 4th quite as long as 2nd, not thickened. Mentum large, horny, forming a short broad triangle, beyond which projects the small ligula, surmounted by two minute paraglossæ; the labial palpi very exposed, elongate and slender, 2nd joint shorter than either the 1st or 3rd, which are about equal in length. Front of the head rather strongly margined and forming a curve, in front of which is the membranaceous clypeus, to the anterior margin of which is attached the large membranaceous labrum, this being indistinctly bilobed. Antennæ short, ten-jointed, the last four joints forming an extremely broad and abrupt club, the 10th or terminal joint being only about half as broad as the 7th; the 7th joint is not closely applied to the 8th, so that it is possible there may be a minute joint concealed between them, in which case the antennæ would possess the normal number of eleven joints. Pronotum oblong, but slightly narrowed towards the front, the sides and front margined, the base not margined but rounded. Prosternum excessively reduced. Front coxæ large, elongate, vertical, quite exposed, contiguous; side piece of the prothorax produced behind the coxæ, but extremely slender, so as to be only a spine,—the two not meeting in the middle. Middle coxæ large, partly exerted, separated by a very broad space, the suture between the meso- and meta-sterna straight and very conspicuous. Hind coxæ large, contiguous, forming a large plate. Hind-body with five visible segments. All the tibiæ thick, and armed with closely set spines and hairs; the front tarsi four-jointed, the middle and hind ones almost certainly five-jointed, but the basal joint is concealed by the broad apex of the tibia and its hairs and spines.

The interesting insect I here describe should be placed in or near the *Anisotomides*, from all the known members of which group it differs strikingly by the membranaceous clypeus, the very distant intermediate coxæ, and the absence of the small intermediate claval joint characteristic of the family: the structure of the hind coxæ and trochanters is, however, quite that of *Anisotoma cinnamomea*.

*DIETTA SPERATA*, n. sp.

*Oblongo-ovalis, rufescens, nitida, capite obsolete punctato, oculis magnis, convexis; prothorace sparsim obsolete punctato, sed punctis ba-*

*salibus seriatis, distinctis, aliisque fere irregulariter sparsis; scutello crebre fortiter punctato; elytris sat fortiter punctato-striatis, versus apicem setis erectis paucis; epipleuris setulosis; abdomine pubescente, crebre punctato, sub-opaco.* Long. 6 mm.

I have no doubt the individual described is a male; the front tarsi are quite simple, the apex of the hind trochanters forms a curved tooth, and the hind margin of the posterior femur shows also a slender curved spine on the middle.

Found in N. W. Australia by Mr. Duboulay, and placed in Mr. Saunders' collection among the *Bolboceri*, to which insects, the short antennæ with broad club, give it at first sight some resemblance.

Thornhill: August 15th, 1876.

## DIAGNOSES OF UNDESCRIBED SPECIES OF *PHYTOPHAGA*.

BY JOSEPH S. BALY, M.D., F.L.S.

### *HORATOPYGA ORNATA*.

*Late ovata, valde convexa, rufo-picea, nitida, genubus, tibiis, tarsis antennisque piceis; thorace tenuiter punctulato, ad latera leviter excavato, lateribus ampliato-rotundatis, basi constrictis; elytris confuse seriatim punctulatis, violaceis, singulatim pustulis novem,—2, 1, 3, 2, 1, dispositis,—fulvis, ornatis.* Long. 4 lin.

Hab.: Guinea, Camaroons.

### *HORATOPYGA SAUNDERSI*.

*Ovata, convexa, rufo-fulva, nitida, thorace irregulariter punctato, ad latera foveolato-punctatis, lateribus leviter rotundatis, ad apicem angustatis; angulis anticis obtusis; elytris piceo-æneis, sat fortiter punctato-striatis, striis ad latera confusis.* Long. 2 lin.

Hab.: Algoa Bay.

### *HORATOPYGA SEJUNCTA*.

*Ovata, convexa, rufo-fulva, nitida; capite sat fortiter punctato; thorace ad latera varioloso, disco tenuiter sub-remote punctato, lateribus a basi ad apicem rotundato-angustatis; angulis anticis sub-acutis; elytris nigro-piceis, regulariter punctato-striatis.* Long. 2 lin.

Hab.: South Africa, Graham's Town.



## CARYSTEA MICANS.

*Elongata, parallela, convexa, piceo-fulva, æneo-micans, pedibus antennisque fulvis, his extrorsum fuscis; capite lato, plano, crebre fortiter punctato; thorace elytris æquilato, lateribus rectis, ad apicem rotundato-angustatis; dorso transversim convexo, ad latera varioloso, disco minus remote punctato; elytris viridi-æneis, fortiter punctato-striatis, interspatiis transversim rugulosis.*

*Long. 2 lin.*

*Hab.:* Western Australia, Champion Bay.

## DISONYCHA ORNATA.

*Sub-elongata, modice convexa, dorso explanata, flava, nitida, vittâ verticali, antennis, thoracis maculâ parvâ oblongâ ante basin, tibiis (dorso excepto) tarsisque nigris, thorace transverso, ante basin et ad latera excavato, angulis posticis lateraliter productis; elytris oblongis, infra basin transversim depressis, impunctatis, cyaneis, flavo-limbatis.*

*Long. 3½ lin.*

*Hab.:* Pebas, Upper Amazons.

## SEBÆTHE QUADRIPUSTULATA.

*Ovata, convexa, fulva, nitida, antennis (basi exceptâ) elytrisque nigris, his vix punctulatis, singulatim pustulis duabus magnis, unâ prope medium, sub-rotundatâ, alterâ ante apicem sub-trigonatâ, fulvis, ornatis.*

*Long. 2 lin.*

*Hab.:* Java.

## HERMÆOPHAGA TRICOLOR.

*Anguste oblonga, convexa, nigra, nitida, capite thoraceque rufo-fulvis, antennis (basi piceâ exceptâ) oculisque nigris; thorace lateribus marginatis, medio obtuse angulatis, angulo antico obtuse truncato, lateraliter paullo producto, elytris distincte punctulatis, metallico-cæruleis.*

*Long. 2½ lin.*

*Hab.:* Brazil.

## HERMÆOPHAGA VENTRALIS.

*Anguste oblonga, convexa, rufo-fulva, nitida, femoribus posticis, oculis antennarumque articulis intermediis nigris, tibiis tarsisque piceis; thoracis lateribus fere rectis, parallelis, medio obsolete angulatis, angulo antico obtuse truncato, lateraliter distincte producto; elytris viridi-cyaneis, distincte punctulatis.*

*Long. 1½ lin.*

*Hab.:* Para.

## LACTICA FULVIPES.

*Anguste oblongo-ovata, convexa, nigra, nitida, pedibus fulvis, antennarum articulo basali et quatuor ultimis sordide albidis; thorace impunctato, sulco basali profunde impresso; elytris sub lente tenuissime punctulatis, infra basin transversim depressis, nigro-cyaneis; callo humerali prominulo.* Long. 4 lin.

Hab.: Pebas, Upper Amazons.

## LACTICA BINOTATA.

*Ovata, convexa, lactea, nitida, antennis, femoribus dorso, tibiis tarsisque nigris; thorace elytris impunctatis, illo sulco basali medio fere obsoleto, utrinque profunde impresso, his infra basin haud depressis, singulatim prope medium puncto nigro notatis.* Long. 2 lin.

Hab.: Mexico, Teapa.

## LACTICA SELLATA.

*Ovata, convexa, lactea, nitida, pedibus antennisque nigris; thorace impunctato, sulco basali profunde impresso; elytris sub lente tenuissime punctulatis, plagâ magnâ communi a basi ad medium extensâ, nigrâ, ornatis.* Long.  $2\frac{1}{2}$  lin.

Hab.: Para.

## LACTICA NIGRIPENNIS.

*Elongato-ovata, convexa, lactea, nitida, antennis (basi fulvâ exceptâ) nigris, pedibus fulvis, femoribus dorso ad apicem, tibiis quatuor anticis totis, posticis dorso tarsisque nigris; elytris impunctatis, nigris, vertice lævi, medio foveâ magnâ impresso; thoracis sulco basali profunde impresso; oculis rotundato-ovatis, intus leviter sinuatis.* Long.  $2\frac{1}{2}$  lin.

Hab.: Para.

## LACTICA APICICORNIS.

*Anguste ovata, convexa, pallide flava, nitida, capite nigro, antennarum articulis ultimis quatuor albidis, tarsis quatuor anticis nigro-piceis; thorace impunctato, sulco basali profunde impresso; elytris infra basin transversim depressis, sub lente vix punctulatis, obscure metallico-cæruleis, oculis oblongis, intus leviter sinuatis.* Long.  $2\frac{1}{2}$  lin.

Hab.: Amazons.

## LACTICA SUBNITIDA.

*Elongata, fulva, subnitida, oculis, antennis, tibiis tarsisque nigris;*

*thorace lateribus, basi rectis, ante medium paullo convergentibus, sulco basali medio obsoleto, utrinque profunde impresso; elytris parallelis, infra basin haud depressis, sub lente tenuiter punctulatis; encarpis trigonatis, contiguis.* Long. 4 lin.

Hab.: Para.

#### ENNEAMERA THORACICA.

*Anguste ovata, nigra, nitida, antennarum basi thoraceque fulvo-piceis; elytris obscure metallico-cæruleis, evidenter crebre punctulatis.*

Var. A. *Thoracis disco nigro.*

Long. 2 lin.

Hab.: Manilla, collected by the late H. Cuming.

#### ENNEAMERA LIMBATA.

*Late rotundato-ovata, modice convexa, fulva, nitida, femoribus posticis (basi exceptâ), vertice, antennis extrorsum, oculis, pectoreque nigris; thorace rufo-fulvo, maculis quatuor, transversim dispositis, piceis; elytris cyaneis vel cæruleis, anguste flavo-limbatis; femoribus anticis abdomineque plerumque piceo-tinctis.*

Var. A. *Thoracis maculis obsoletis.*

B. *Thorace elytrisque obscure fulvis, his postice piceis, flavo-limbatis.*

Long. 2½ lin.

Hab.: Menado, Tondano.

#### ENNEAMERA FULVIVENTRIS.

*Oblongo-ovata, convexa, nigro-ænea aut nigro-cærulea, nitida, abdomine fulvo, elytris sub lente tenuissime punctulatis.*

Long. 1½–2 lin.

Hab.: Amboyna, Menado, collected by Mr. Wallace.

#### ENNEAMERA AUSTRALIS.

*Ovata, convexa, nitida, nigro-ænea, antennis (basi piced exceptâ) nigris; subtus nigra, tibiis tarsisque piceis; abdomine piceo-marginato; elytris impunctatis.*

Var. A. *Abdomine toto fulvo.*

Long. 2½ lin.

Hab.: West Australia, Rockhampton.

Warwick: 7th July, 1876.

DESCRIPTIONS OF THREE NEW SPECIES OF EUROPEAN  
HEMIPTERA-HOMOPTERA.

BY JOHN SCOTT.

Amongst the few species which I had put on one side as doubtful or undescribed species, collected by the Rev. T. A. Marshall in his travels abroad, I have now the pleasure to describe the three following, which I believe to be entirely new to science. My reason for this belief is that they were returned to me from the Continent, whither I had sent them for comparison with the collections and drawings of the late Dr. Fieber, as entirely unknown.

GNATHODUS ROSEUS.

Reddish-pink. *Elytra*: anterior margin and nerves very pale straw-yellow; 1st apical cell next the anterior margin deep fuscous.

*Head*—*crown* testaceous-yellow, slightly reddish in the middle. *Face* reddish-pink, with a narrow, longitudinal, yellowish line down each side of the centre, united towards the lower margin; *frons* broadly pale yellow. *Antennæ* pale yellow; *setæ* brown.

*Thorax*—*pronotum* pale testaceous-yellow; disc more or less reddish-pink; near the anterior margin two small punctures placed one on each side of the centre. *Scutellum* pale testaceous-yellow, with a slight reddish-pink tinge next the base; basal angles with a dark triangular patch and two small punctures between them above the transverse channel. *Elytra* reddish-pink; anterior margin, as far as the 1st nerve, very pale straw-yellow; nerves fine, pale straw-yellow, exterior margin of the 1st nerve next, and at the apex narrowly margined with dark fuscous; apical cells pale; 1st, next the anterior margin, dark fuscous; appendix dark fuscous. *Wings* somewhat fuscous, apex of the anterior margin darker; nerves blackish. *Legs* dusky reddish-pink. *Tibiae*: 3rd pair fuscous or brownish-red, base pale; spines brown, paler next the base, each set in a black puncture. *Tarsi*: 3rd pair pale fuscous.

*Abdomen*: above dark pink, sides broadly, and a narrow dorsal line, pale yellow.

Length,  $1\frac{1}{2}$  line.

The only other European species known to me is the *G. punctatus*, Thunb., with which the above cannot be confounded, as that insect is pale green and spotted with black.

Two or three examples from Corsica.

THAMNOTETTIX RUBRIVENOSA.

Whitish or yellowish-white with a reddish-tinge. *Elytra* spotted with brown, somewhat similar to *Deltocephalus sabulicola*; nerves, especially in the ♀, bright red.

*Head* carmine-red. *Crown* with a narrow yellow central line not reaching to the base, near to which latter is a shallow fovea on each side having a minute black spot in the middle; on either side of the anterior margin is a short, somewhat comma-shaped, yellow streak, or frequently only a spot; frons carmine-red with a more or less decided yellow, cruciform character in the middle. *Face* more or less dark brown, with a yellow, longitudinal, central line joined to that on the frons, and gradually widening until it reaches the apex; on each side about six transverse, narrow, yellow lines, the two upper ones generally joined exteriorly. *Clypeus* yellow. *Cheeks* yellow. *Antennæ*: 1st joint yellow, 2nd brownish, apex narrowly yellow; *setæ* brown.

*Thorax*—*pronotum* broad, with a reddish tinge, anterior margin and a narrow longitudinal line, yellow; on each side of the latter in front a short black streak, and behind each eye a small black spot. *Scutellum* yellow, basal angles more or less red; transverse channel and a short line at each extremity forming a  $\neg$ -shaped character, blackish. *Elytra* whitish or yellowish-white with a reddish tinge. *Clavus*: nerves red; apex of the area enclosed by the axillary and anal nerves, and a streak in the middle, brown; apex and an oblong spot nearly in the centre of the area brown. *Corium*: nerves red; ante-apical area next the claval suture brown; apex of the exterior nerve of the adjoining ante-apical area on each side more or less broadly margined with brown, upper transverse nerve and an oblong spot above the middle of the area, brown; nerves of the apical areas dark brown, areas more or less fuscous. *Sternum* black, exterior margin of the segments broadly, posterior margin narrowly, yellow. *Legs* pale yellow. *Thighs*: all the pairs with a very short black streak, or one or two minute spots on the inside at the apex. *Tibiæ*: all the pairs narrowly brown down the interior margin, or sometimes the 1st and 2nd only spotted; 3rd pair: spines pale brown set in dark brown punctures.

*Abdomen*: above black; posterior margin of the segments narrowly yellow; side margins narrowly rosy.

♀. All the characters as in the other sex, except that the nerves of the elytra are of a brighter red, and give to the insect a much more rosy appearance.

Length,  $1\frac{1}{2}$  line.

Habitat: Corsica.

#### PHLEPSIUS FILIGRANUS.

White. *Elytra*: nerves very pale brownish-yellow, minutely and irregularly spotted with dark brown; disc with very fine transverse reticulations.

*Head*—*crown* yellowish-white with a somewhat indistinct pale central line, and a small black spot in front on each side of the apex. *Face* very faintly brownish with a narrow, longitudinal, central line, and several transverse ones, yellowish. *Eyes* somewhat reddish. *Antennæ* pale yellowish; *setæ*, towards the apex, brown.

*Thorax*—*pronotum* very faintly brownish, round the anterior margin pale yellowish; disc irrorated with white, and with a central longitudinal line of the same colour. *Scutellum* yellowish-white, with a darker triangular patch at each basal angle.

*Elytra* white. *Clavus*: nerves very pale brownish-yellow, disc between the latter sparingly but finely reticulated transversely with dark brown, sometimes occurring as minute spots; apex dark brown. *Corium*: nerves very pale brownish-yellow, minutely but irregularly spotted with dark brown; disc finely reticulated transversely with dark brown, areas here and there with a few minute dark brown spots in irregular clusters. *Sternum* pale yellowish. *Mesosternum* posteriorly spotted with very pale brown. *Legs* pale yellowish. *Tibiæ*: 3rd pair; spines pale, each set in a dark brown puncture. *Tarsi*: 3rd pair faintly brownish. *Claws* brown.

*Abdomen*: underneath pale yellow; posterior margin of the segments next the connexivum finely reddish-brown. Length, 2 lines.

A single ♂ example labelled Nimes.

Lee: July 11th, 1876.

## BRITISH HEMIPTERA-HETEROPTERA—ADDITIONAL SPECIES.

BY O. M. REUTER (HELSINGFORS).

### PLESIODEMA, Reut.\*

Body sub-elongate, finely pale pubescent, not covered with a short, deciduous, scale-like pubescence. Head, across the eyes, about half as wide as the width of the basal margin of the pronotum, inclined, shining. Neck without a carina. Clypeus slender, very little prominent, its base in the intermedian line of the eyes. Eyes granulated, touching the anterior margin of the pronotum. Antennæ inserted near the apex of the inner ocular margin; 1st joint not exceeding the apex of the clypeus, 2nd joint as long as 3rd and 4th. Rostrum a little exceeding the posterior coxæ; 1st joint reaching to the middle of the xyphus, 3rd and 4th joints thin. The throat very short. Pronotum, between the basal angles, twice as wide as long, disc very slightly convex, shining, the calli distinct, the side margins and the basal margin nearly straight. Scutellum with the base not covered. Hemelytra developed, membrane with two cells. Wing-cells with a hook-like nerve. Xyphus of the prosternum very convex. Thighs not incrassated, not spotted. Tibiæ with thin, concolorous spines. 3rd joint of the tarsi as long as 1st and 2nd together. Terebra of the ♀ long.

### P. PINETELLUM, Zett.

*Capsus pinetellus*, Zett., Ins. Lap.; Kirschb., Rh. Wiesb.; Flor, Rh. Livl. *Agalliaestes lugubris*, Fieb., Eur. Hem. *Plagiognathus pallidipennis*, J. Sahlb., Not. F. et Fl. Fenn. *Plesiodema pinetellum*, Reut., Rev. Crit. Caps.

♂ and ♀ discolorous.

\* Gen. Cimic. Eur.; p. 45.

♂ black-brown, clothed with very short grey hairs. Antennæ dark luteous; 2nd joint incrassated and compressed; hemelytra much longer than the abdomen, fuscous, cuneus, and the cubital nerve of the corium brownish-ochreous, the base of the cuneus pale; cell-nerves brownish-testaceous, a little spot below the apex of the cuneus transparent; legs dark luteo-testaceous; tarsi brownish.

♀ brownish-testaceous, clothed with grey hairs. Antennæ thin, slightly luteous; hemelytra testaceous, apex of embolium and the cuneus sub-ochreous, cuneus pale at the base; cell-nerves of the membrane slightly testaceous, cells and a little spot below the apex of the cuneus pale; legs testaceous, tarsi brownish.

Length,  $2\frac{1}{2}$ — $3\frac{1}{2}$  mm.

On *Pinus sylvestris*, near Perth (Hill of Moncrieff); ten specimens taken by myself, the 30th June.

#### PSALLUS DIMINUTUS, Kirschb.

*Capsus diminutus*, Kirschb., Rh. Wiesb. *Psallus diminutus*, Fieb., Eur. Hem.; Reut., Hem. Gymn. Sc. et Fenn., 1.

Yellowish, covered with deciduous golden hairs intermixed with black; antennæ and legs pale testaceous; the 2nd joint of the antennæ almost longer than the last two, the 4th joint about one-third shorter than the 3rd; thighs spotted with black; tibiæ with black spots and rather strong black spines; hemelytra posteriorly bright orange-red, cuneus red, base and apex white; membrane dusky, nerves pale yellowish, the outer cell-nerve whitish; inner cell at the base, and a spot below the apex of the cuneus, clear; head between the eyes,  $\frac{1}{2}$ — $\frac{2}{3}$  (♂) or twice (♀) as wide as the width of the eye; genital segment of the ♂ not carinated. Allied to *P. varians*, H.-Sch., but smaller, differing in the structure of the head and of the antennæ, also by the uncarinated genital segment of the ♂. Length,  $3\frac{1}{2}$ — $4\frac{1}{2}$  mm.

This species is not uncommon on oaks near Cluny Hill, Forres, where many specimens were taken by Mr. Geo. Norman and myself.

#### TEMNOSTETHUS NIGRICORNIS, Zett.

*Anthocoris nigricornis*, Zett., Ins. Lap. *Temnostethus pinicola*, Frey, Mitth. schweiz. ent. Ges. *Temnostethus nigricornis*, Reut., Öfv. Vet. Ak. Förh., 1871.

Black, shining; antennæ entirely black, 2nd joint a little longer than the 3rd and 4th together; rostrum reaching nearly to the middle of the mesosternum, dark piceous; pronotum with the side margins distinctly sinuate, the transverse channel of the disc deep, the base largely emarginate; hemelytra developed, brown, cuneus blackish-brown, membrane blackish, the basal half whitish; thighs piceous; tibiæ and tarsi dark ferruginous.

Length,  $3\frac{1}{2}$  mm.

One specimen, taken by myself, on *Pinus sylvestris*, near Perth (Hill of Moncrieff), the 30th June.

Lerwick, Shetland, July 11th; and Forres, August 4th, 1876.

*Note on Agallias Wilkinsons, Doug. & Scott.*—On the 30th June, I found, near Perth, a little macropterous Hemipteron, which belongs to the genus *Agallias*. It is very different from *A. pulicarius*, Fall., having entirely brown antennæ and testaceous tibiæ without black spots, and resembles the macropterous form of *A. saltitans*, Fall., but is not metallic shining, has unicolorous elytra, and much paler antennæ. I think that this insect is the (till now unknown) macropterous form of *A. Wilkinsons*, Doug. & Scott. The body is black, shining, clothed with fine, pale, adpressed hairs; the posterior margin of the vertex is sharp, the front convex; the antennæ are pale brownish, the first joint at the base blackish, the second joint shorter than the width of the head; the basal margin of the pronotum is nearly one-half wider than the head, and largely emarginate, the calli very distinct; hemelytra clothed with longer pale hairs, half of the membrane exceeding the apex of the abdomen, cell-nerves whitish; thighs brown, testaceous at the apex; tibiæ testaceous, with fine spine-like black hairs; tarsi brownish.—O. M. REUTER, Lerwick, Shetland: *July 11th*, 1876.

*Note on a variety of Megalocera (Trigonotylus) ruficornis, Fall.*—In the "Scottish Naturalist," vol. i, p. 264, Dr. Buchanan White gave us a list of the Scottish species of *Miris*, and mentions the protective mimicry of *M. holsatus*, *laevigatus*, and *calcaratus*, which have a green form when the grass is green and juicy, and an ochreous form when their food plant is getting dry and yellowish; whereas *M. ruficornis* has not an ochreous autumnal form. But this insect offers another example of protective mimicry. It is commonly darker green, with the antennæ red, and with brownish stripes on the pronotum and scutellum. During an excursion I made with Mr. Norman to the Culbin Sands near Forres, I found *M. ruficornis* very abundant on *Psamma arenaria*, but all the many hundred specimens which we saw were more robust and larger than the usual form; their colour was bright green (almost "glauco-virescens"), in accordance with the colour of the food plant; the brownish stripes almost invisible; the first two joints of the antennæ were also green, the third green only towards the apex, and the fourth entirely pale testaceous. It is curious that this insect, which typically lives in damp places, is larger on these dry sand hills.—Id., Forres: *August 4th*, 1876.

*A phase in the history of Ampulex compressum, the destroyer of the common Cockroach.*—On June 1st, 1876, a general holiday, called "Dushohara," I went for a day's collecting in the jungly ground about Pultah, near Barrackpore, and, on visiting a favourite spot, an old peepul-tree by a tank, that I have known for the last three years to be the chosen haunt of several species of *Hymenoptera*, and especially of the common, but beautiful, wasp *Ampulex compressum*, and the ant *Pseudomyrma bicolor*, I was surprised to find an unusual commotion, or, as the natives would express it, "tummasa," going on between the above-mentioned species; all over the trunk of the tree were couples engaged in a series of struggles or wrestling matches—wasp *versus* ant—and so many individuals were occupied in this way, and their actions were so rapid, that for some time I could make little out of their proceedings; so, picking out a single wasp low down on the trunk, and in an easy situation for observation, I sat myself down to watch her movements. She was apparently keeping guard over a small piece of smooth bark, about eighteen inches in diameter, and in



evidently a thorough "Who'll tread on the tail of my coat" spirit. Presently, a worker of *P. bicolor* took up the challenge, and trespassed on the sacred ring: down came the wasp to the attack, and the ant, nothing loath, met her half way; then commenced a series of manœuvres on the part of the wasp to get her favourite hold, dodging round and round the ant to get either above or behind, the ant trying to frustrate these attempts by turning also, and always presenting its strong mandibles to its opponent; the wasp, however, soon proved too quick, for, seizing the ant with its jaws well round the waist, with a quick movement of the head, she jerked it a clear foot off the tree; another and another ant would be treated in the same way. Sometimes two ants together would appear in the "ring," and then the wasp would retreat, or a single ant would take up a position for a time on the confines of the ring, and protected by a little ledge of bark, and where the wasp would not venture to attack, but the place of vantage was no sooner vacated, than, after the usual fighting for the "hold," the ant was treated to the inevitable "back-fall." During the time I watched the tree, I saw at least twenty ants "thrown," but not one wasp "tackled." What was most curious was the fact that all this appeared to go on without the least ill-feeling between the contending parties, and a careful examination of the defeated ants showed them to be none the worse for their falls. I watched several on their reaching the ground, they seemed to be a little bewildered, but soon recovering themselves, made for the tree again, two, in particular, in the most plucky manner, went straight for the spot from which they had been hurled and tried another "bout" with the old opponent. A sporting friend with me was immensely pleased with the whole proceedings, which re-called visions of wrestling matches equally well conducted at the Agricultural Hall, Islington; and he was willing to back the "dark blues" for any odds. I cannot in any way account for this great Wrestling Meeting, unless I credit these two species with a true love of sport. The ants were not swarming, there were not any larvæ or pupæ to be carried off, or nests to be plundered. (as in the case of *Polistes hebraeus* and *Ecophylla smaragdina*, mentioned by the late Mr. Horne, in his Notes on Hymenoptera of the N. W. Provinces). I have visited the tree continually for the last three years, but have never seen anything of the kind going on before. I have also been to the tree since the first of June, but though both these species were there in great numbers, nothing unusual went on, the wasps leaving the ants alone, and *vice versa*; if any peculiarity in their behaviour could be noticed, it was a steady and polite resolution to avoid one another.—G. A. JAMES ROTHNEY, Barrackpore, Bengal: June 12th, 1876.

*Occurrence of Vespa crabro in the north.*—In the course of a few days spent in the West Highlands, I made no entomological observations worth noting, except that on July 21st, I saw a fine large hornet, and I am under the impression that it was a ♀, near the head of Glen Coe, though I did not capture it. It sailed steadily within a foot of me, and I saw it as clearly as if it were in a drawer, and the hornet is an insect with which I am very familiar. On July 20th, I saw *Erebia Cassiope* plentifully on Ben Nevis. *Scopula alpinalis* was abundant on many mountain slopes.—T. A. CHAPMAN, Hereford: July 29th, 1876.

*On preserving Dragon-flies.*—I believe there is, at present, no generally known method of satisfactorily preserving the colours of Dragon-flies; in fact, Mr.

McLachlan tells us that we are to reach a certain point of perfection and then stop. I have tried a method with very good results. The method is precisely that laid down in the "Entomologist" of last month for *Macro-Lepidoptera*, viz., skinning the bodies and filling them with plaster of Paris until thoroughly dry. I have preserved some of the yellow-marked species, which have retained their colour as perfectly as they were when alive, and I intend to try it on other species as soon as I can get them, but this is a bad district for this order of insects.—S. L. MOSLEY, Almondbury Bank, Huddersfield: *July*, 1876.

[I see no objection to the proposed method, supposing the insects to be set on short pins, so that the bodies touch the paper (an undesirable condition otherwise). If on long pins and set high, it appears to me that the weight of the filled body would materially increase the risk of breakage. But I scarcely understand what is meant by "skinning." If, in addition to disembowelling, the inner lining membrane of the abdomen be also removed, breakage (at all times difficult to avoid) becomes nearly inevitable. Without wishing to discourage our correspondent's endeavours to preserve the beauty of these insects, I should like to compare some of these prepared specimens this time next year with others then newly caught. A correspondent (Mr. T. D. Gibson-Carmichael) recently made to me a very useful suggestion, viz., that the insects should not be killed until 24 hours (or thereabouts) after being captured, so that time be allowed for the contents of the intestines to pass away naturally; but this is of comparatively little service with females full of ova. In unprepared examples of *Anax*, *Æschna*, &c., the female always loses its colour more than the male, owing to the decomposition of the ova.—R. McLACHLAN].

*Notes from Lourenço Marques, South Africa.*—We got here safely yesterday. Spent a week at Durban (Natal) waiting for the coasting steamer to this. In that week we collected a box full of butterflies, and I see a good many about here though it is winter. I believe this will be better than Angola for butterflies—at all events, the coast region. We have several species that we never saw on the west coast; we shall send a case with what we may have collected by the next steamer, which will leave this in about three weeks. We like the place very much—very pretty country covered with grass, bush, and small trees, and the harbour is simply magnificent. It is no doubt destined to be the port of the whole of South Africa.—J. J. MONTEIRO (in a letter to Mr. Rutherford), Lourenço Marques: *June 18th*, 1876.

*Observation on Mr. Hewitson's note respecting Mr. Buxton's Collection of orange-tipped Butterflies.*—Much as I appreciate the kind intention of my esteemed friend Mr. Hewitson, in commending my acumen as superior to his own and that of Mr. Labrey, I cannot unblushingly accept the full measure of praise bestowed upon me by the renowned Lepidopterist.

It is indeed a fact that, with the help of the National and other collections, I was successful in discovering the limits of each link of the continuous series of species composing the genus, and consequently I was enabled to determine eighteen of the forms in Mr. Buxton's fine series to be new species (two of them previously in the Museum collection), but I was not able to discover a multitude.

I think, if it be not presumptuous to offer a suggestion to a friend so much my senior, that possibly Mr. Hewitson's inability to discern the novelties in Mr. Buxton's

boxes may be accounted for by his unwillingness at all times to define what is meant by the term "species."—ARTHUR G. BUTLER, 10, Avington Grove, Penge: *August*, 1876.

*Pachnobia alpina*, Westwood, = *hyperborea*, Zetterstedt.—When I was in London last May, Mr. McLachlan had the kindness to show me the type of *P. alpina*, taken by Mr. Douglas in 1839 on Cairn Gowr in Perthshire, at an elevation of 3000 feet. The only mention of it that I have seen is in Stainton's Manual of British Butterflies and Moths, vol. i, p. 241. The species is described in Westwood and Humphrey's British Moths (1843 or 1845), and I shall be glad have the exact citation, as Stainton unfortunately gives no authors' names. I recognised at first sight that *P. alpina* is the same species as the *Agrotis hyperborea* of my large Catalogue (1871, No. 1098). Zetterstedt described it in his *Insecta Lapponica*, in 1840 (p. 938) as *Hadena hyperborea*. The type of *P. alpina* is possibly a little darker than specimens from Lapland, but it is old, and even the Lapland individuals show aberrations. In 1860, I took this insect (in company with my friend Dr. Wocke) not unfrequently in Finmark (Norwegian Lapland), in July, and we found pupæ and also larvæ at the end of May in moss. I detailed the account in the *Stettiner entomologische Zeitung*, 1861, p. 361. Since then, the species has been found on the Dovrefeld in the centre of Norway, on the Riesengebirge (Silesia), and on the Alps of Switzerland and Tyrol. On the Alps of Carinthia it has a reddish (instead of bluish) coloration, and this form was described by Hering as *carnica*, and by Herrich-Schäffer as *glacialis*. This is certainly only a local form of *hyperborea*. I saw, in the Museum at Pesth, a specimen taken by the younger Frivaldsky in the Carpathian Mountains, which is intermediate between the two forms. The reddish *Agrotis sub-rosea*, Steph., becomes blue (var. *subcærulea*, Stdgr.) in the north of Russia. The Scotch *Pachnobia alpina* must take the older name of *hyperborea*, Zett., and the species has a wide distribution on the Continent.—O. STAUDINGER, Blasewitz, Dresden: *August*, 1876.

[This insect was described and figured (the figure tolerably good) in Humphrey and Westwood's British Moths as *Agrotis alpina*, vol. i, p. 118, pl. xxiii, fig. 13 (1843). In the first edition of Doubleday's Catalogue (this portion published in November, 1847), it appears as "*Taniocampa hyperborea*, Dalman?", with the synonym "*alpina*, Westwood." In the edition of 1878, it is called "*Pachnobia alpina*," with the synonym of "*carnica*, Heer," and no longer any mention of "*hyperborea*." In this latter edition, Doubleday more or less followed Guenée, as a reference to the "Noctuélites," vol. i, p. 342, of the latter author, shows. The name *hyperborea* is attributable to Zetterstedt, who adopted Dalman's MS. name. The name *carnica* is due to Hering, not Heer, as said by Guenée and adopted by Doubleday.—EDS.].

*Natural History of Cymatophora ocularis*.—On the 28th of May, 1874, Mr. J. E. Fletcher, of Worcester, very kindly sent me a dozen eggs of this species which had been laid the 23rd and 26th of May: he found the ♀ moths, although impregnated, very unwilling to deposit in captivity, and at last they chose to lay their eggs singly, or in little groups of two or three together, on paper rather than on the twigs of poplar, with which they had been supplied; the hour of laying was after dusk in the evening; one moth lived eleven days after pairing, and then died without laying an egg.

In its general figure, the egg is semi-spherical, convex above and flattish beneath, its surface very finely reticulated; creamy-white in colour, with the margin at the base of the shell colourless and pellucid in contrast to the opacity of the rest, over which the shell is glistening. On the evening of the 1st of June, without the eggs showing any previous change of colour, the larvæ began to hatch, four of them within half an hour of dusk, the others in course of the night; the young larvæ were nearly one-eighth of an inch long, of a pale pellucid-straw colour, inclining a little to greenish, the segmental folds showing pale yellow; by June 5th, they were three-sixteenths of an inch long, and one or two had, by this time, united the poplar leaves by short, thick, silken attachments, and they were all feeding on the green cuticle. By the 12th, the most forward were half an inch in length, and others about three-eighths, these last showed a black dot on each side of the second segment, while those half an inch long had a black dot on each side of the second, third, fourth, eleventh, and twelfth segments; the head buff colour, and body of greenish-buff, with a broad green velvety interior showing through the semi-transparent skin; up to this time, they had been eating away the cuticle from both upper- and under-sides of the leaves fastened by detached threads one upon the other; henceforward, they began and continued to eat quite through the substance of the leaves from the edges, but each larva was always concealed between two leaves united by a couple of strong, broad based, short, stud-like fastenings of white silk; in this retreat, when not feeding, the larva reposes with its body curved round;—and here, also, when the time for a moult approaches, it lies in a close coil, its head resting on the middle of one side of the body.

Particularly noticing a larva, which moulted on June 27th, I observed the body to be very soft and delicate, velvety in appearance, of a pale buff tint; the head of pale honey-yellow, rather glistening, with black ocelli, and black on each side the mouth; two black dots, one above the other, on the side of the second and third segments, and one on the fourth, another also on the twelfth segment. After the last moult, when the larvæ measured full an inch long, their heads were pale brownish-orange, broadly marked with black at the sides of the mouth, and round the papillæ, the skin of the body still soft in texture, without the least gloss excepting a narrow shining plate behind the head, which is slightly glistening, and the anal flap and legs; the colour of the body delicate greyish-green, showing through a pale buff skin, the dorsal vessel seen pulsating distinctly, the spiracles flesh colour, and the colouring along their region pale yellowish, the black dots just as before.

By the 4th of July, two larvæ had spun up, the two others were still feeding—the rest having died off one at a time at different stages, probably from being so often interrupted by my investigations. Even at the last, when mature, the habit of the larva is still to lie curled round, with its head inwards, and towards, or in contact with, the seventh or eighth segment of its body; I found also that when turned out from its domicile between two leaves, the larva, when placed on a fresh leaf and another laid over, would quickly spin new fastenings, but it was not easy to watch its proceedings, for, when I raised the upper leaf, but a very little, in order to peep, the larva would directly strengthen and shorten the silk stud that I had probably stretched; and it did so by taking the middle or thinnest part between its two front legs, and pulling it inwards towards its body, and holding it there dexterously, whilst it spun shorter threads in a moment or two to the surface of the leaves, bring-

ing them into close contact; after having thus fortified itself, it would at once curl round into its favourite position, and go to sleep until roused again on another side in the same manner, when it would repeat the operations for its security, and shut out further observation.

Three moths were bred, viz.: two on the 6th, and one on the 9th of June, 1875.

The full-grown larva, while crawling, measured from one and three-eighths to one and a half inches in length, moderately stout in proportion, cylindrical, tapering very little anteriorly near the broad head, and a little on the two hinder segments; in point of colour the head is now orange-ochreous, barred on either side the mouth with black as far as the ocelli, which are included, and with black square marks surrounding the pale antennal papillæ, its surface a little granulous and shining; the skin of the body beautifully soft and smooth, without gloss, excepting a narrow, shining, very pale greyish plate on the second segment, and on the anal tip; all the legs are shining; its colouring above on the back very faint yellowish, most tenderly tinged with greyish, changing almost imperceptibly to primrose-yellow along the spiracular region, and again below to the same delicate tint as the back; a very faint glaucous pulsating vessel shows partially through the dorsal region; on each side of the front margin of the second segment are three black spots, on the side of the third segment two black spots one above the other, and on the side of the fourth segment one black spot, and one black spot on each side of the twelfth segment; the spiracles are pale flesh colour, the tubercular dots whity-brown, which, together with their short and fine single hairs, can only be discerned with a good lens.

The cocoon is placed in a hollow cave contrived by spinning several leaves together at their edges, and is composed first of an open net-work of coarse silk of a deep brownish-red colour, the meshes of which are at first, when wet, quite regular and symmetrical in some parts, and very flexible (at which time the pale skin of the larva is seen through them); but these soon contract, and are enveloped by the closing up of the leafy surroundings: when the cocoon is opened and divested of the leaves, it is a remarkable specimen of reticulation; the outer foundation oval in form, three-fourths of an inch long, is made, as I have said, with very stout threads, leaving large meshes of oval, pear-like, and angular shapes, filled with a very tangled layer of much finer silk, reminding one of the smaller vessels of a skeletonized leaf. The pupa measures five-eighths of an inch in length, thick and dumpy in form and proportion, the surface roughened, except in the abdominal divisions, by minute pits, and on the wing-covers and thorax by corrugations; the abdomen ending with two converging spines, their tops re-curved, crossing each other, and a few recurved short bristles round the abdominal tip: the colour black, the abdominal divisions dark purplish dull red, the other parts a trifle glistening.—WILLIAM BUCKLER, Emsworth; July 10th, 1876.

*Sesia philanthiformis* in South Wales.—The receipt of some tufts of thrift containing larvæ of *Sesia philanthiformis* from the Isle of Man, with some hints as to its habits, from my friend Mr. Birchall, set me looking for this pretty little clear-wing on the rocks of the Pembrokeshire coast.

But these rocks are more suited for the investigations of birds than of featherless bipeds, and in most places an effective examination is impossible. Therefore, I was well pleased when, about a fortnight ago, I happened on a bit of coast in which a

steep slope covered with grass, flowers, and dwarf furze extends down to some grand terraces of sea beaten rock, accessible with little difficulty. Here I soon found traces of *philanthiformis*, and, before long, had the pleasure of seeing a specimen sunning itself on the bare limestone rock. In this case, seeing was not catching; but a couple of specimens were soon after secured, and some pupæ found, from several of which the moths have since emerged.

As usual, the pupæ were only to be found in stunted plants growing in chinks of the rocks, within reach of the sea spray. The larva, after hollowing out the main stem of the plant, forms a silken tubular cocoon within it. On emerging, the pupa skin is drawn out on the top of the dead plant.—CHAS. G. BARRETT, Pembroke: 15th July, 1876.

*Note on Ebulea stachydalis.*—Strange to say, *Ebulea stachydalis* has totally failed to re-appear in the locality in which I took my specimen last year, but for this there is compensation in the fortunate discovery of the species within a few hundred yards of home. A large patch of the ill-smelling *Stachys sylvatica* grows on some rough ground by the railway, and scattered plants along the neighbouring ditches, and here I have been able to secure some fine examples.

A more intimate acquaintance with the species reveals the unexpected fact, that when alive it is *not* strikingly like *sambucalis*, but from its shorter, squarer forewings, its darker colour and square discal spot, is actually far more likely to be mistaken, when flying, for *Scopula olivalis*. In habit, it closely agrees with *verbas-calis*, fluttering close among its food-plant when disturbed, and creeping under and hiding itself among the plants as quickly as possible. Probably its sluggish and secret habits have had much to do with its having been so long overlooked in this country, but it may, probably, also prove to be very local. I have searched the *Stachys* in various places for twenty miles, but without again meeting with the insect. Moreover, it appears to be, here, utterly regardless of the facilities for its spread and increase afforded by the luxuriant abundance of *Parietaria officinalis* on every old wall in the neighbourhood,—the only Lepidopterous insect attached to this plant being apparently *Xylopada Fabriciana*.

As *stachydalis* is by no means over, I still hope to find it in other localities.—ID.

*Diasemia literalis.*—Mr. Barrett's note on this species incites me to put on record all I know about it, merely, however, as confirmatory of what he has said, for I can give but very little additional information.

The only specimen I ever met with myself, I took one evening between 9 and 10 o'clock, at a lamp in a Railway Station, situated in a valley of the best land in this county, with rich pasturage and great elm trees, but with hills of poorer land not very far off. Mr. Norcombe, who was quick of eye and light of foot, for one or two seasons took several specimens on the wing, early in the evening on the slopes of a very steep rough field in this neighbourhood; I have not been able to visit it for years, but I remember the soil was very poor and hard, and the herbage scanty: he used to stand so as to get them in sight against the sky, and I fancy they did not fly very much above the grass flower heads. On consulting the *Intelligencer*, vol. iv, p. 157, I see Mr. Norcombe's captures in 1858 must have been made at the very end of July.—J. HELLINS, Exeter: July 8th, 1876.

*Description of the pupa of Nola albulalis.*—A note on the pupa of *Nola albulalis* will perhaps not be out of place, as supplementary to Mr. J. P. Barrett's description of the larva in this month's (August) E. M. M.

When full grown, the larva wanders from the food plant and crawls up a culm of dry grass, or a withered twig, and spins a cocoon as described by Mr. Barrett. The pupa is about half-an-inch in length, cylindrical, and of nearly uniform width throughout, tapering a little towards the anal extremity. The head is bluntly rounded, the eye- and antenna-cases prominent. Colour of the dorsal surface deep reddish-brown, becoming gradually darker towards the head, which is nearly black; abdominal divisions rather paler than the ground colour. Ventral surface paler brown, the eye-cases black, and the antenna-cases margined all round with black.—G. T. PORRITT, Huddersfield: August 10th, 1876.

*Early hibernation of butterflies.*—In the "Petites Nouvelles Entomologiques,"\* some remarks have lately been made on the early period at which some of the *Vanessa* commence their hibernation. There is at present in the house here striking evidence of this. Some weeks ago, between two and three dozen individuals of *Vanessa urticae* took up their abode in a moderately dark part of an upstairs passage, where they remain packed together in little bundles of four or five individuals quite motionless, and this, although during the past week we have experienced the hottest weather recollected in this part of the country. These individuals, unless turned out by the housemaid's broom (as I hope they will not be), will remain in their positions till some warmer temperature than is usual at that period, occurs in or about March, when they will commence to flit about and make their way to the windows to seek an escape. This year I have noticed very many more individuals than usual of this species in the house.—D. SHARP, Eccles, Thornhill: August 15th, 1876.

## Reviews.

EIGHTH ANNUAL REPORT ON THE NOXIOUS, BENEFICIAL, AND OTHER INSECTS OF THE STATE OF MISSOURI: by CHARLES V. RILEY, State Entomologist. Jefferson City, 1876, pp. 1—185.

It has long been to us an annual pleasure to receive and notice Mr. Riley's valuable Reports. That now before us, though probably not so diversified in its contents as some of the others, fully supports his reputation as a careful and conscientious observer, and as a capital artist on wood. The volume is principally occupied by extended information on well-known insect pests, such as the Colorado Potato Beetle, the Army Worm, the Rocky Mountain Locust, and the Phylloxera. Among the "innocuous" insects is a detailed and illustrated account of the anomalous "Yucca-borer" (*Megathymus yuccæ*), which Mr. Riley brings very powerful evidence to prove is really a Butterfly, although he considers it may represent a remnant of a more ancient synthetic type between the *Castnidae* and *Hesperidae*. On some points our author does, we think, jump too hastily (or by prejudice) at conclusions, and we utterly fail to see the force of his foot-note at p. 31, regarding the genital parts in *Lepidoptera*—if he will carry his avowed "limited examinations" somewhat further (say, for instance, among the *Pyrallidae*), we feel sure he will change his opinion. One thing we regret exceedingly, but the author has only developed, not initiated, a vicious practice. We allude to the strained efforts to give "English" names to

\* Vide also Ent. Mo. Mag., vol. ii, p. 190.—Eds.

everything. Opening the Volume by chance at p. 54, we found *Pezomachus minimus* styled the "Diminished *Pezomachus*," and *Ophion purgatus* the "Purged *Ophion*." If the agriculturalists like this sort of thing, we pity them.

PROCEEDINGS OF THE NATURAL HISTORY SOCIETY OF GLASGOW: vol. ii, pt. ii. Glasgow: published by the Society, 1876.

The commercial capital of Scotland (in which the British Association is about to hold its 46th Meeting) has often been taunted with being too exclusively devoted to the "science" of money-making to be able to pay any serious attention to matters that do not produce any vision of "bawbees." Has not our faithful "Punch" recently presented us with a still more highly coloured picture of Scottish character in the shape of a fly-fishing laird, who, having hooked an enormous fish, would be "gay and glad" if he saw his "twa and saxpenny flee" out of its mouth! The young Society issuing these Proceedings shows that the great city of the west has in it a goodly number of hard working naturalists who love Nature for her own sake, and its publications are of a kind that will not permit of their being considered only as the productions of a local body, and of local interest. On the contrary, these Proceedings will rank with those of acknowledged scientific Societies. Almost every branch of Natural History is represented, and the authors are in many cases men who have attained distinction outside local considerations. We notice no less than thirteen entomological articles, principally by Mr. P. Cameron and Mr. T. Chapman, most of them of considerable value, and many of those by Mr. Cameron, on Scottish saw-flies and allied families, must be consulted by all workers on European *Hymenoptera*.

ENTOMOLOGICAL SOCIETY OF LONDON: *August 2nd, 1876*.—Sir S. S. SAUNDERS, C.M.G., Vice-President, in the Chair.

The following were elected Members of the Society: Harold Swale, Esq., of St. George's Road, Pimlico, and Thomas Stanton Hillman, Esq., of Ringmer, Lewes.

Mr. McLachlan exhibited a series of thirteen examples of a dragon-fly (*Diplax meridionalis*, Selys) recently taken by him in the Alps of Dauphiné in France, between Grenoble and Briançon (the exact locality being near the village of La Grave, at the base of the "Aiguille du Midi"), remarkable for the extent to which nearly all were infested by the red parasite described by De Geer as *Acarus libellula*\* (perhaps a species of *Trombidium*). Of the thirteen examples, captured casually, only one was free from parasites, the number of these on the others being respectively 7, 8, 9, 15, 17, 19, 28, 47, 51, 73, 96, and 111, or a total of 481 on twelve individuals. They were firmly fixed on the nervures towards, and at, the base of the wing, and almost (but not quite) invariably on the under-side, and whatever might be the number on any particular dragon-fly, it was always divided nearly symmetrically on the two sides of the insect, those much infested having a very pretty appearance, from the wings appearing as if spotted with blood-red. It appeared to him that the *Acari* must attain their position by climbing up the legs of the dragon-fly when at rest, possibly at night, and they probably did not quit it till the insect died, or perhaps died with it, so firmly were they fixed. He remarked that the history of these *Acari* was involved in much obscurity, for it appeared by no means certain that all those

\* These *Acari* must not be confounded with the species infesting *Geotrupes*, *Bombus*, &c., &c. The latter forms another group of *Acari*; they roam freely over the body of the insect, though evidently preferring certain positions, no doubt partly attributable to the fact that, in these positions, they are not so liable to be dislodged. The *Acarus* of the dragon-fly, on the contrary, probably never quits the position taken up, and is a "tick," speaking broadly. The idea that *Acari* make use of insects merely as locomotive engines to convey them from one locality to another is a very old one, and has often been suggested, but, as it seems to me, without the slightest foundation in truth.—R. McL.



existing could ever gain access to dragon-flies, just as in the case of the bed-bug and the human flea, where there must be myriads that never have an opportunity of tasting human blood. He further noticed that at the Meeting for August 1, 1864, he exhibited a dragon-fly from Montpellier, similarly attacked, and it was recorded as *Diplaz striolata* (Tr. Ent. Soc., 2nd ser., vol. ii proc., p. 36). This was an error, the insect being *D. meridionalis*, which seemed peculiarly subject to attack.

Mr. S. Stevens exhibited *Tillus unifasciatus*, *Xylotrogus brunneus*, &c., recently taken by him on new oak fences at Norwood, rare insects, and not taken near London for many years (*vide* E. M. M., Aug., 1876, p. 65).

Mr. Forbes exhibited an example of *Quedius dilatatus* (a parasite in hornets' nests), taken by him at sugar in the New Forest.

Mr. Champion exhibited *Harpalus 4-punctatus*, *Dendrophagus crenatus*, *Leptura sanguinolenta* ♀, *Amara alpina*, *Cryptophagus parallelus*, and *Omosita depressa*, all from Aviemore, Invernesshire.

Mr. Grut, with reference to the communication from the Foreign Office, read at the Meeting on the 3rd May (E. M. M., vol. xiii, p. 19), read a further official communication from our Minister at Madrid, respecting the ravages of locusts in Spain, accompanied by examples of the insects, which prove to be *Decticus albifrons*, Fab., and also a multitude of curved earthen tubes filled with the eggs (these tubes were innocently described in the official letter as "chrysalids," each giving birth to a large number of insects!).

The Rev. R. P. Murray forwarded a paper from Mr. W. H. Miskin, of Brisbane, containing descriptions of Diurnal *Lepidoptera* from Queensland.

Mr. E. Saunders read the concluding portion of his Synopsis of British *Hemiptera-Heteroptera*.

Mr. Smith read Notes on *Nematus gallicola*, the gall maker on the leaves of species of *Salix*, of which the ♂ had apparently not hitherto been observed. From 500 or 600 galls collected in 1875 he had obtained multitudes of females and two males; a similar attempt in 1876 had resulted in one male. He was of opinion that by persevering from season to season, it was possible to obtain the male of this, and of other allied species of which this sex is practically unknown, though these might occur at rare intervals, the female being capable of continuing the species without (of necessity) immediate male influence. And he argued from this that the long-sought male of *Cynips* may some day be found (especially by collecting the galls early in the year). He expressed his belief that the late Mr. Walsh had proved beyond question the breeding of a male *Cynips* in America; nevertheless, some Members present thought there was still an amount of obscurity concerning the precise generic rank of the presumed male *Cynips*.

Professor Westwood sent drawings and descriptions of a Lepidopterous insect belonging to the *Bombycidae*, parasitic upon *Fulgora candelaria*, and described as *Epipyrops anomala*. The notes concerning this extraordinary instance of parasitism were communicated to him (with specimens) twenty-six years ago by Mr. J. C. Bowring, from Hong Kong. The larvæ were found attached to the dorsal surface of the *Fulgora*, and as they grew had a cottony covering, which also occurred in the pupa state (a period very variable in duration). The whole circumstantial evidence tended to prove that it was upon the waxy secretion of the *Fulgora* that the larva fed, and that of this the cocoon of the pupa was formed. The general appearance and structure of the imago induced Prof. Westwood to place the insect in the family *Arctiidae* as an aberrant form. [This very extraordinary insect was noticed by Prof. Westwood at the Meeting of the British Association at Oxford in 1860, and an account of it, under the name of "*Epipyrops anomala*, Bowring," appears in the Report (the 30th) of that Meeting, p. 124, 1861.—Eds.].

DESCRIPTIONS OF SOME NEW GENERA AND SPECIES OF NEW  
ZEALAND COLEOPTERA.

BY D. SHARP, M.B.

(concluded from page 77.)

ANCISTROPTERUS BROUNI, *n. sp.*

*Rufus, nitidus, nudus, fortiter punctatus; elytris humeris extrorsum prominulis, pone medium tuberculis duobus obtusis.*

*Long. corp. (rostro incl.) 7½ mm.*

Red, obscurely tinged with a darker colour; head and rostrum rather closely punctured. Thorax about as long as it is broad at the base, much narrowed to the front, rather distinctly but not densely punctured. Elytra with rows of coarse punctures, with the shoulder directed outward as a broad short process: on each, just behind the middle, close to the suture, is an obtuse elevation with a very minute pencil of hairs on its summit; these tubercles are laterally compressed, and separated only by a narrow space.

This fine and very distinct species was recently sent from Tairua by Captain Broun, but only a single individual. I have, with much pleasure, named it in honour of its discoverer. The specimen is, I have no doubt, a male.

OBS.—The genus *Ancistropterus* was unknown to Lacordaire, and appears to me to be very closely allied to *Scolopterus* as limited by him and Mr. Pascoe, but is readily enough distinguished by the convex eyes.

ANCISTROPTERUS MUNDUS, *n. sp.*

*Rufus, vel nigricans, subnudus; capite thoraceque dense punctatis, fere opacis; elytris striato-punctatis, nitidis, postice declivis, humeris muticis.*

*Long. corp. (rostro incl.) 5½ mm.*

Rostrum and head densely punctured, eyes very convex. Thorax small, about as long as broad, much narrowed in front, a little constricted just behind the anterior margin, very closely and somewhat coarsely punctured, with a line of scanty, easily removed, pale scales along the middle. Elytra with the shoulders well marked, but not prolonged, their basal portion flattened, and so forming a sort of angle with the depressed apical portion; they are furnished with rows of punctures, which, though rather fine at the base, become deepened into striæ on the middle, and the interstices near the suture are more elevated on this part; they are shining, but furnished with a few setæ and scales along their sutural portion.

Also sent by Captain Broun with the preceding and *A. quadrispinosus*, White; so that we may hope that other species of this remarkable genus will be brought to light.

STEPHANORHYNCHUS LAWSONI, *n. sp.*

*Angustus, fuscus, tomento obscuro, griseo vel ochraceo, vestitus;*

*vertice sub-inflato, æquali; elytris medio tuberculis elevatis duobus, alterisque minoribus ante apicem.* Long. corp.  $4\frac{1}{2}$ — $5\frac{1}{2}$  mm.

Clothed with a sub-variegate pubescence, which in character is intermediate between scales and hairs. Rostrum scarcely so long as the head, eyes very prominent, the space between them obscurely sulcate, the vertex behind the eyes somewhat swollen, but even and without prominences. Thorax conical, elongate, very narrow in front, and considerably constricted. Elytra rather long and narrow; on the middle near the suture each has a rather long elevation, which is laterally compressed, and midway between this and the apex is a much smaller tubercle. Legs slender, shaped as in *S. curvipes*, White, but the four front femora without teeth.

I have received this curious species sparingly, both from Mr. Lawson and Captain Broun.

N.B.—I am not acquainted with the species of *Stephanorhynchus* just described by Mr. Pascoe, but a specimen of the present insect which I sent to him was remarked on as "very distinct."

*ALEMA*,\* nov. gen. (*Chrysomelidarum*).

*Caput exsertum, ore haud inflexo.*

*Antennæ filiformes, ad insertionem approximatae.*

*Thorax coleopteris duplo angustior, lateribus vix marginatis.*

*Femora posteriora incrassata.*

*Acetabula antica occlusa.*

Antennæ 11-jointed, inserted near one another on the middle of the head. Thorax scarcely broader than the head, quadrate, but constricted behind the middle, almost unmarginated at the sides. Elytra without epipleuræ. All the coxæ but slightly separated; there is no projection of the process between the front ones. The legs are rather long and slender, the tibiæ without spurs or grooves; the first joint of the tarsi twice as long as the 2nd, 3rd much broader than the others, bilobed, 4th rather short, not so long as the basal joint. Hind-body with five visible ventral segments, 1st large, as long as the three following together, the three following about similar to one another, and not abbreviated along their middle, except that in the males, the 4th segment is shorter in the middle than at the sides; 5th rather large.

I shall not attempt to decide on the exact affinities of this anomalous little insect, for no one but an entomologist who is well acquainted with all the details of structure of the *Phytophaga* could, I am sure, do so satisfactorily. I think, however, it would be most correctly placed as indicating a separate tribe of Chapuis' *Eupodes*, connecting that Section with the *Halticidæ* of the Section *Cycliques*. It is clearly a highly important synthetic form.

*ALEMA PARADOXA*, n. sp.

*Ferruginea, nitida, nuda, antennis pedibusque dilutioribus; elytris striatis, striis fortiter punctatis.* Long. corp.  $2\frac{1}{2}$ —3 mm.

*Variat, elytris plus minusve fusco-signatis.*

First joint of antennæ considerably thicker than the following joints, 2nd rather shorter than 1st, and considerably stouter than 3rd, and also considerably longer than it, 4th longer than 3rd, 4—11 all slender and elongate, but the apical joints are larger than the intermediate, 11th longer than 10th. Head with the eyes rather large, the space between them elevated, and longitudinally divided down the middle. Thorax almost impunctate. Elytra with ten rows of coarse punctures, the interstices between them being slightly elevated, especially behind. The extremity of the pygidium slightly projecting beyond the elytra; under-surface almost impunctate.

This species has been sent me both from Auckland by Mr. Lawson and from Tairua by Captain Broun; the latter gentleman indicated some of his specimens as being found on one of the tree ferns (*Cyathea dealbata*).

**ARNOMUS,\* nov. gen. (*Chrysomelidarum*).**

*Coxæ anteriores distantes.*

*Antennæ elongatæ, filiformes, basi distantes.*

*Caput subinsertum, oculis integris.*

*Elytra ampla, thorace latiora, pygidium obtectentia.*

*Scutellum conspicuum, parvum.*

The interesting insect for which I propose this generic name, is somewhat allied to *Stylosomus*; and would apparently, in Chapuis' arrangement, indicate a fresh group, allied to the *Stylosomites*, and placed at the beginning of the *Cryptocephalides*. It differs from *Stylosomus*, by the widely separated coxæ, by the ample elytra which give the insect a different form, and by the visible scutellum. The group *Stylosomites* consists of the single Mediterranean genus *Stylosomus*, and by altering its formula somewhat, the New Zealand genus might be included in it.

**ARNOMUS BROUNI, n. sp.**

*Ferrugineus, capite pectoreque æneis, antennis apice fuscis; dense punctatus.*

*Long. corp. 2½—3 mm.*

*Fem. abdomine apice fovea magnâ.*

Antennæ rather long, slender, the four or five basal joints reddish, the others infusate. Head brassy-green, very densely punctured. Thorax very transverse, but a good deal narrower than the elytra, reddish, more or less tinged with brassy, extremely densely and rather finely punctured, the interstices being excessively small; the sides and base finely margined. Scutellum small, black and impunctate. Elytra very densely and rather coarsely punctured, with a small but distinct, shining, humeral callus. Legs elongate, red, the tarsi moderately stout and long.

The species apparently varies a good deal in colour ; especially as to the extent and distinctness of the brassy tinge.

Five specimens of this very interesting species have been recently sent me from Tairua by Captain Broun, whose persevering researches are bringing to light a remarkable number of important New Zealand insects, and in whose honour I have named it.

APHILON,\* nov. gen. (*Chrysomelidarum*).

*Corpus latum, sub-hemisphericum.*

*Coxæ omnes distantes.*

*Acetabula antica aperta.*

*Elytrorum epipleura lata.*

Antennæ 11-jointed, with the last four joints considerably thickened, widely separated at their point of insertion, this being just at the inner and front part of the eye, which is small, but convex and nearly semicircular. Thorax finely margined at the sides. Anterior coxal cavities small, obliquely oval, very widely separated, and also far distant from the sides. Mesosternum excessively short, forming a mere band, placed just on the same level with the metasternum, so that the very widely separated middle coxæ almost touch the front coxæ. Hind coxæ deeply imbedded, very widely separated, conical in form. Five ventral segments of the hind-body are visible, the first as long as the three following together, 2nd, 3rd, and 4th narrow, just similar to one another, of just the same width at the sides as in the middle ; 5th elongate. Pygidium covered. Elytra with their epipleura very broad, and closely adapted to the sides of the body. Scutellum not visible. Tarsi all 4-jointed, moderately slender, basal joint considerably longer than the 2nd, 3rd truly bilobed, with the lobes narrow, 4th joint rather longer than the basal joint, the claws small and simple.

This most anomalous little creature, I think would be best placed among the *Phytophages*, Section III, *Cycliques*, Chapuis ; in which section, however, it must apparently form a distinct tribe. Notwithstanding two or three days spent in investigating it, and searching for its allies, I am quite unable to discover that it has any described near relatives.

APHILON ENIGMA, n. sp.

*Latum, convexum, nudum, supra æneum, subtus fusco-æneum, antennis pedibusque testaceis ; fere læve, prothorace basi medio fortiter punctato.*

*Long. corp. 2 mm., lat. 1½ mm.*

Antennæ yellow, not quite reaching the back of the thorax, 1st joint rather large, 2nd stouter than, but not so long as, the 3rd ; 4th, 5th, and 6th small, 7th broader than the preceding one, 8th, 9th, and 10th transverse, 11th elongate, longer than the two preceding together. Head very small in proportion to the rest of the insect. Thorax strongly transverse, continuing the outline of the elytra without

interruption, its base very closely applied to the base of the elytra, considerably narrowed towards the front, the sides are quite smooth and shining, but on the extreme base in the middle, is a series of closely placed large punctures, and in front of these the surface is sparingly punctured. Elytra shining, brassy, without sculpture or any striae. Under-surface also shining and impunctate, but the apical ventral segment alutaceous and sub-opaque. Legs clear yellow, the tibiae short, but distinctly longer than the tarsi, the front and middle pair slightly angulated externally about the middle.

A single specimen of this curiosity has been sent from Auckland by Mr. Lawson; I hope the reception of other specimens may enable me to make known its characters in a more complete manner. On commencing my examination of it, I supposed it would prove allied to the *Erotylidae*, but I do not now think this is likely to prove the case.

**PENITICUS,\* nov. gen. (*Chrysomelidarum*).**

*Corpus breve, convexum.*

*Thorax lateribus marginatis et sinuatis, angulis posterioribus minute prominulis, basi truncato.*

*Elytra ad angulos humerales pliculis elevatis.*

*Pedes crassiusculi, tarsorum unguiculis basi appendiculatis.*

Head deflexed, inserted as far as the back of the eyes, which are convex. Front coxæ rather widely separated, the central part of the prosternum only half as long as the sides of the thorax. Middle coxæ rather widely separated; metasternum very short; hind coxæ only a little more distant from one another than the front ones are; in form they are rather short and transverse. Fourth ventral segment abbreviated in the middle, 5th short and indistinct. Elytra convex and bulged, rather produced at the extremity, near the rounded and indistinct humeral angles, with some short longitudinal elevations or folds. Legs rather short and stout, the tibiae without grooves or notches; the claws of the tarsi thick at their base, so as to appear appendiculate.

These curious insects, from the structure of their tarsi and general characters, must no doubt be classified in the *Eumolpides*, but I fail to discover in Chapuis' work any near ally for them; and must leave their exact position doubtful for the present. The species appear to be extremely rare, only one or two of each having as yet been found.

**PENITICUS SUFFUSUS, n. sp.**

*Fuscus, nitidus, antennis pedibusque dilutioribus, fere testaceis; prothorace parce minus distincte punctato, maculis pallidioribus vagis; elytris parce irregulariter punctatis, apice et pliculis humeralibus testaceis.*

*Long. corp. 5 mm.*

Antennæ reddish, 3 mm. in length, 2nd joint much shorter than the others, so

\* *Pén-it-i-cus*.—D. S.

that it is scarcely longer than broad, 4th shorter than 3rd, 11th joint elongate, longer than the 10th. Head rather broad, indistinctly punctured. Thorax rather large, broader than long, the sides much broadest in the middle, and narrowed to the base, so that the outline of the insect is much interrupted in the middle, the front angles greatly deflexed but rather acute, the hind angles with a minute sharp projection; it is shining and quite free from pubescence, almost of a pitchy colour, with paler indistinct spaces, only sparingly punctured. Elytra sparingly and irregularly punctured. Legs yellowish.

Auckland; sent by Mr. Lawson. Captain Broun has also recently sent me a specimen which may be a female variety of the Auckland species; it is rather smaller and narrower, the surface is more distinctly punctured, the colour rather darker, and all the tarsi a good deal more slender. Captain Broun's specimen was numbered 244, and was found on the 16th January, in the Hikuwai forest.

*PENITICUS ANTIQUUS, n. sp.*

*Fuscus, vix æneo-micans; antennis rufis, pedibus testaceis; elytris humeris apiceque dilutioribus, fere punctato-striatis, pliculis elongatis.*

*Long. corp. 4½ mm.*

Very similar to *P. suffusus*, but rather smaller and narrower, with the sculpture of the upper surface more distinct and regular. The thorax is sparingly, but distinctly, and rather deeply punctured. The elytra are rather irregularly punctured, but the punctures are almost arranged in rows, and the humeral folds are elongate and take the form of elevated interstices on the basal portion of the elytra.

A single individual was sent me some time ago from Tairua by Captain Broun. It is no doubt a male; the fourth abdominal segment is completely abbreviated in the middle, and the apical dorsal segment much inflexed, so that the form of the hind body is nearly, if not quite, that of the Section *Camptosomes* of Chapuis, rather than that of the "*Cycliques*" to which the *Eumolpides* belong in his classification.

Thornhill, Dumfriesshire:

May, 1876.

DESCRIPTIONS OF NEW *HEMIPTERA-HETEROPTERA*.

BY EDWARD SAUNDERS, F.L.S.

*BERYTUS SETIPENNIS.*

*Testaceus, punctatus, capitis processu hirsuto, antice rotundato, antennarum articulo apicali nigro, thoracis carinis valde elevatis, antice valde productis; basi anguste sinuatâ. Elytris valde costatis, apice*

*fusco, clavi costâ et corii costâ interiori setosis, membranâ magnâ, apice late rotundato, striis quatuor intercostalibus fuscis ornatâ; pedibus testaceis, concoloribus, tarsorum apicibus nigris. B. montivago affinis sed antennarum articulis multo brevioribus et elytrorum carinis setulosis mox distinguendus.*

*Long. 2¼ lin.*

Malta. J. J. Walker.

#### LYGÆOSOMA LOWNII.

*Sanguineum, capite thoraceque capillis longis vestitis, hoc formâ subtrapezoidali, basi maculis duabus nigris ornatâ; scutello nigro, apice sanguineo; elytris sanguineis, albido pilosis, immaculatis, membranâ fuscâ, angulo interiore basali maculaque discoidali rotundatâ niveis; antennis nigro-fuscis, hirsutis, articulo apicali dilutiore, pedibus nigris, hirsutis; abdomine rufo, piloso, lateribus nigro maculatis, segmento anali nigro.*

*Long. 2½ lin.*

Galilee. B. Lowne.

#### ISCHNODEMUS CHAMPIONI.

*I. sabuleti affinis, sed magis elongatus, capitis lateribus ante oculos utrinque fortius et sub-acute tuberculatis; thorace longiore, parum convexo, antice attenuato; capite thoraceque nigris, rugoso-punctatis, sub-pilosis, hoc margine basali fere rectâ, sub-elevatâ, testaceâ, lævigatâ; scutello nigro, punctato, lined basali sub-elevatâ nitidâ; elytris brachypteris, pallidis, venis fusco-testaceis; abdomine nigro-fusco, subtilissime piloso; pedibus testaceis, femoribus basi late nigris; antennis nigris, validis.*

*Long. 2 lin.*

Cephalonia. J. J. Walker.

#### GALEATUS SCROPHICUS.

*Caput nigro-fuscum, spinis quinque antennisque testaceis; thoracis lateribus diaphanis, valde explanatis, rotundatis et sub-elevatis, costis quatuor instructis; marginibus antea valde angulatis, postice angulis sub-rotundatis, disco nigro-fusco, carinis tribus diaphanis, valde elevatis, quarum media altissima et vesiculis duabus reticulatis fumosis inflatis instructa, anterior major valde inflata et sub-rotundata, antea modice attenuata, posterior minor sub-compressa; elytra diaphana, reticulata, lateribus explanatis, marginibus prope basin valde angulatis, apice late rotundatis, cellulis discalibus elevatis; pedibus testaceis, abdomine subnigro-fusco.*

*Long. 1½ lin.*

Point Scropha. J. J. Walker.

Wandsworth: 12th September, 1876.



DESCRIPTION OF A NEW SPECIES OF EUROPEAN *HEMIPTERA*-  
*HETEROPTERA*.

BY JOHN SCOTT.

*DERÆOCORIS (CALOCORIS) ZELLERI*.

Black, somewhat dull. *Pronotum* and *elytra* margined with orange-red or red; *cuneus* orange-red or red.

*Head* black. *Crown* with fine transverse furrows on each side. *Eyes* black, posteriorly with a more or less distinct orange-yellow line. *Antenna* black; 3rd and 4th joints pitchy-brown, the former narrowly yellow at the base.

*Thorax*—*pronotum* black, very finely wrinkled transversely, sparingly clothed with short, fine pale adpressed hairs, sparingly intermixed with black, which are best observable on the margins; down the middle, a more or less distinct, narrow, reddish line extending from behind the callosities to the posterior margin; lateral margins orange-red or red, very narrowly so at the anterior margin, the colour becoming wider as it curves round the outer margin of the callosities, from below which to the posterior margin it continues of an almost equal width. *Scutellum* black, apex broadly orange-red or red, not reaching to the side margins. *Elytra* black; anterior margin broadly orange or red, not reaching to the apex; base very narrowly blackish; *cuneus* orange-red or red, with a few short black hairs; apex very narrowly black; *membrane* dark fuscous-brown, with a broad darker streak extending from the apex of the *cuneus* to the apex of the anterior margin; nerves dark brown. *Sternum* black; *pro-* and *mesosternum* margined exteriorly with yellow round the base of the legs, connected by a broad yellow streak along the anterior portion of the latter; *metasternum* reddish posteriorly; orifice of the odoriferous sac broadly margined with yellow. *Legs* black: *tibia* somewhat dusky yellow, base broadly, apex more narrowly, black: *tarsi* and *claws* black.

*Abdomen* black; on the under-side the margins of the segments with a triangular red patch, and on each side in a line with the base of the legs a broad, red, longitudinal streak; genital segments of the ♂ with a large red patch on each side.

Long.  $3\frac{1}{2}$  lines.

At first sight, one is reminded of *Lopus gothicus* by the markings on the above insect, but the differences in the shape of the head and pronotum alone, at once separate it from that genus. Its true place appears to be near *D. marginellus*, from which it may be distinguished by the absence of the yellow collar and broadly yellow claval suture. On the last named also, the yellow anterior margin of the *elytra* is continued to the apex, the *cuneus* is without a black apex, and the legs are red.

In the collections of Messrs. Douglas & Saunders, and in my own.

The specimens, taken at Palermo, were received from Professor Zeller.

Lee: September 8th, 1876.

DESCRIPTIONS OF THREE NEW SPECIES OF *HEMIPTERA-  
HETEROPTERA* FROM NEW ZEALAND.

BY F. BUCHANAN WHITE, M.D., F.L.S.

For the following and other species of *Hemiptera*, I am indebted to Captain Broun.

*PLOCIOMERUS DOUGLASI*, *n. sp.*

*Ferrugineo-nigricans, capillis pallidis parce vestitus; antennis, tuberculis antenniferis ad apicem, pronoti lobi postici angulis lateralibus hemelytris, rostro pedibusque plus minus flavescentibus; antennarum articuli primi dimidio basali et apice, articuli secundi apice, articuli tertii basi apiceque, hemelytrorum punctis maculisque, annulo latissimo in medio femorum anticorum, annulo lato apicem versus femorum intermediorum posteriorumque, necnon apicibus tibiæ omnium, tarsorum articulis tertiis unguiculisque, nigricantibus aut ferrugineo-nigricantibus; membrana haud abbreviata, brunneo-fusco-variegata, venis nonnullis albicantibus; antennarum articulo tertio leviter incrassato.*

*Long. 5—5½ mm.*

♂. *Tibiis anticis subtus pone medium dente acuto armatis, apicem versus compresso-incrassatis.*

*Patria: Nova Zelandia. (In museo auctoris.)*

Head black, finely punctured, clothed with pale yellow hairs. Antennæ brownish-yellow with paler hairs: 1st joint, basal half and apex narrowly brownish; 2nd joint rather darker at extreme apex; 3rd joint fuscous at base and apex, slightly incrassated upwards; 4th broken off. Antenniferous tubercle yellowish at apex. Eyes and ocelli reddish-brown. Rostrum yellowish-brown, 1st joint fuscous at base and apex. Pronotum with a few long pale hairs, dull reddish-black, somewhat darker at the sides and in the middle; strongly constricted, the anterior lobe about twice as long as posterior and somewhat globose; posterior lobe strongly punctured, the posterior two-thirds of the side margins pale yellow, interrupted at the outer angle by reddish-black; hind margin slightly sinuate above the scutellum. Scutellum dull blackish, reddish on each side of the centre of the disc, strongly punctured. Sternum reddish-black. Coxæ blackish; trochanters yellowish; anterior femora shining black, broadly yellow at base, and narrowly at apex, armed below near apex with two strong and some smaller teeth. Anterior tibiæ of the ♂ with a tooth beyond the middle below, and flatly incrassated upwards towards the apex. Intermediate and hind femora yellow, with a broad reddish-black band near the apex; all the tibiæ and tarsi yellow, with the apices of the tibiæ fuscous, and the 3rd joints of the tarsi and claws reddish-fuscous. Elytra yellowish, with a few long pale hairs. Clavus with the three rows of punctures reddish-black. Corium with reddish-black punctures, and with a small spot near the base (sometimes almost obsolete), a larger square one about the middle of the anterior margin, a still larger triangular one filling up the anterior apical angle, and an irregular streak enclosing the inner apical angle, reddish-black. Membrane variegated with brownish-fuscous; some of the

veins yellowish-white. Ventral surface of hind-body broadly black in the middle, and reddish at the sides in the ♂; reddish or yellowish-brown with a black band on each side of the middle in the ♀.

Varies in the intensity of the markings.

This species appears to be somewhat allied to *P. tumens*, Stål.

#### ANEURUS BROUNI, n. sp.

*A. lævi affinis, sed minor et angustior. Caput comparate haud minus, processu apicali minus producto, tuberculis antenniferis apice extus distincte acuminatis; antennæ articulo primo pyriformi, apice truncato, primo et secundo fere æquilongis. Pronoti marginibus lateralibus postice minus rotundatis, antice minus sinuatis, disco minus transverse depresso. Segmenti genitalis maris tuberculis duplo majoribus.*

*Long. 3½—4 mm.*

*Patria: Nova Zelandia. (In museo auctoris.)*

Allied to *A. lævis* (as is also *A. australicus*, Stål) and agreeing with it in colour (reddish-brown), but smaller and narrower. Apical process of the head less produced and more triangular. The antenniferous tubercles with a distinct forward prolongation on the outer side of the apex. First joint of the antennæ pyriform and truncate at the apex, about the same length as the 2nd; 3rd and 4th joints broken off in my specimens. Side margins of the pronotum less sinuate in front and less rounded behind; hind margin rather straighter; transverse depression of the disc less apparent. The tubercles on each side of the base of the genital segment of the ♂ (viewed from above) more than twice as long as in *A. lævis*. The specimens being carded, I cannot see the under-side in either the ♂ or ♀, but in the latter the 1st genital segment, viewed from above, appear to have a projecting ridge at each corner of the hind margin.

#### SALDA AUSTRALIS, n. sp.

*Nigra, sub-nitida, pube griseo-brunneâ capillis aureis paucis intermixtis, vestita. Labro in medio, maculis duabus parvis inter oculos et ocellos, macula sub-rotunda apicem versus clavi, maculis septem parvis corii, tibiisque, obscure flavescens. Antennis sub-nigris, capillis griseo-brunneis vestitis; articuli primi et tertii apicali dimidio, articuli secundi apicali quinto, rufo-brunneis. Femoribus sub-nigris, ad basin et prope apicem, subtusque marginibus dimidii basalis, flavescens; tibiis obscure flavis, spinis capillisque fuscis instructis, basi apiceque fuscis; tarsis brunneo-flavis. Pronoti tertio posteriore scutelloque sub-rugulosi. Membrana areolis quatuor instructa, obscure flavo-brunnea, interius ad basin late fusco-brunnea; venis fuscis, maculis ad interiorem venæ primæ exterioris, et utrinque ad basin venæ secundæ, pallidis. Long. 4½ mm.*

*Patria: Nova Zelandia. (In museo auctoris.)*

Elliptic-oblong, black, slightly shining; head, pronotum, and elytra with close short, dark greyish-brown pubescence, and a few golden hairs. Head black, centre of labrum and a small spot on a tubercle to the inside and close to each eye, dull yellow. Eyes dark brown, ocelli reddish-brown. Antennæ (with greyish-brown hairs) blackish, apical half of 1st and 3rd joints and apical fifth of 2nd reddish-brown; 4th joint broken off. Pronotum short, trapeziform; sides straight, reflexed; the callosity occupying the anterior two-thirds, and bounded behind by a furrow, which is more strongly marked at the side margins; the callosity has a central fovea and an obscurer one on each side. Inside each hind angle is a small callosity. Scutellum with a broad, shallow, sub-quadrate excavation on the disc before the transverse furrow; scutellum and posterior third of the pronotum sub-rugulose. Femora blackish-brown, the base, a broad ring near the apex, and the margins of the basal half below, brownish-yellow. Tibiæ dull yellow, fuscous at base and apex, and with fuscous hairs and spines. Tarsi yellowish-brown. Elytra dull black, with obscure yellowish-brown spots; clavus with a roundish one on the apical half; corium with two small ones on the disc, two on the membrane suture, a streak inside the costal margin near the tip, a smaller spot inside that, and another streak opposite it on the outside of the central vein; anterior margin of the corium somewhat flatly reflexed for two-thirds its length from the base. Membrane with four cells, dusky yellowish-brown, broadly clouded with fuscous at the base of the inner margin; veins fuscous; a pale spot to the inside of the outermost vein, and a more indistinct one on each side of the origin of the next vein; a blackish spot between the anterior margin and the apical two-thirds of the outermost vein.

I would take this opportunity of asking for contributions of *Hemiptera* from any part of the world, and will gladly furnish hints and instructions for their collection and preservation. *Hemiptera* may be preserved sufficiently well in alcohol, if care be taken that the bottle is *always kept completely full of fluid*. If the insects do not fill the bottle the remaining space may be filled with crumpled pieces of paper to prevent shaking as much as possible, in case the spirit evaporate during transit.

Perth: August 28th, 1876.

---

*A foreign visitor (Danaë Archippus).*—I have much pleasure in recording the capture of a fine butterfly, which does not appear in the ordinary British Fauna. For some time past, the small Scabious (*S. succisa*) has been in full bloom, making large patches of deep blue by the sides of our woods and out-of-the-way corners of meadows, and this bloom has been very freely frequented by hordes of butterflies, more numerous in point of numbers and varied in their species than I have often seen, thus,—*L. Alexis*, *P. phloas*, *V. Atalanta*, *Io* and *urticae*, *G. rhamni*, and the whites have been in great abundance; and *C. cardui*, *Colias Edusa*, and *A. Paphia* have shown up occasionally in all their gorgeous beauty. On the 6th September, my gardener's son, J. Stafford, a lad of 14 years old, on going to a favourite patch of this Scabious, at once saw this magnificent visitor. It was sitting on a bloom

opening and shutting its wings, and flitting in enjoyment of the shelter and the sunshine, from flower to flower. He took the insect to his father, who brought it to me—and I saw it still alive. It is a fine fresh specimen, and has not flown much.

The locality is two and a-half miles from Neath as the crow flies. Ships laden with timber and other merchandise come up to Neath, and the inference is, that the pupa may have come thus imported, although it is marvellous that the insect could have flown so far without more injury to its freshness.

The nearest houses, excepting four cottages of mine, are half-a-mile distant, and all enquiry fails to discover any one who could, by any possibility, have imported the insect.—JOHN T. D. LLEWELYN, Ynisgygerwn, Neath: *September 13th, 1876.*

[Mr. Llewelyn accompanied the above account by a pen-and-ink sketch, and excellent description of this magnificent butterfly, and the identity of his insect with *D. Archippus* is certain. The larva feeds upon species of *Asclepias*. The insect occurs in America from Canada to the Amazons, and is generally very common. Within a few years, it has spread over the Islands of the Pacific to Queensland and New Guinea, in consequence (probably) of being introduced, in the first instance, with its food plant. The number of vessels passing up the Bristol and St. George's Channels, from all ports of America, is very great: so that the chance importation of a pupa (or even of a perfect insect) is by no means unlikely. Large butterflies are often captured at sea, many miles from land, with but few signs of wear and tear, if the weather be fine.—EDS.].

*Capture of Pieris Daplidice near Southend, Essex.*<sup>1</sup>—On the 11th August, I caught a female of this scarce species flying near a lucerne-field, about ten minutes' walk from the railway station at Southend.—V. E. L. YOUNG, 38, Limes Grove, Lewisham: *16th September, 1876.*

[I have seen this insect, and certify to its authenticity.—J. W. D.]

*Notes on Lepidoptera from North Wales.*—In the first week of this month, I captured by gas light in Pwllheli, North Wales, a very small (though good) specimen of *Bryophila glandifera*. I believe this is the first record of its occurrence in North Wales. I also captured, in the boggy neighbourhood of Penrhyn Dudriath, Festiniog Railway, *Ephyra porata* (common), *Anaitis plagiata* (common), *Argynnis Adippe*, and a beautiful variety of *Lomaspilis marginata*, front wings similar to No. 3 engraving in Newman's British Moths, but with a sepia-brown border on the underwings.—SAMUEL D. BAIRSTOW, Woodland Mount, Huddersfield: *Aug. 26th, 1876.*

*Eupithecia subciliata in Yorkshire.*—At an excursion made by the joint Natural History Societies of Leeds, York, Richmond, and Huddersfield to Boroughbridge and Aldborough on the 7th of August last, several specimens of *Eupithecia subciliata* were taken on or about maple bushes by various Members. Has the species ever been recorded from Yorkshire before?—GEO. T. PORRITT, Huddersfield: *September 4th, 1876.*

*Capture of Catocala fraxini.*—On September 4th, I took a specimen of this rarity, at sugar, in the Vicarage garden here.—A. H. EVANS, Scremerston Vicarage, Berwick.

*Capture of Cidaria reticulata.*—Yesterday I took a specimen of this insect at Windermere. In 1856, the late T. H. Allis and I took several specimens; but since then, though I have gone every year in search of it, I had not met with it till now, an interval of 20 years. I must have gone at least fifty journeys, and it is over fifty miles to the lake side, and then I have to row a mile across the lake, so that this specimen has been hard earned. The *Impatiens noli-me-tangere*, which is said to be its food-plant, I have this time found in plenty. A week or two ago, I found on the *Impatiens* a queer larva, which puzzled Mr. Buckler; but he now thinks it is that of *Hadena rectilinea*. Perhaps, as there is bilberry near, the parent moth dropped her eggs just where she alighted.—J. B. HODGKINSON, 15, Sprink Bank, Preston: August 10th, 1876.

*Capture of a black variety of Orthosia suspecta, Hübn.*—Near Dunkeld, on the 26th August, I beat out of a Scotch fir tree a black moth, which I could not recognise, but Dr. F. Buchanan White, who was present, thought it might possibly be *Orthosia suspecta*; this suspicion is proved to have been correct, for a careful investigation and comparison with ordinary examples have satisfied Mr. McLachlan and me that my capture is a female of this species. The head, thorax, abdomen, and fore-wings are soot-black, the form of the stigmata on the latter being traceable by a delicate whitish outline; the lower wings are fuscous; the antennæ are black, with white annulations on the basal portion. This capture is worth notice, for, as far as I can discover, melanism in this species has not been observed or recorded.—J. W. DOUGLAS, Lee: 11th September, 1876.

*Notes on the larvæ, &c., of Agrotis hyperborea, Zett. (Pachnobia alpina, Westw.).*  
—We found the larvæ of this species at the end of May in fir-woods under moss, in places where *Vaccinium myrtillus* especially grew. All appeared to enter the pupa state, although those which we found first rambled about briskly after being disturbed. Length, 30 mm. Head yellowish, marbled with brown, with two brown lines in front. The 1st segment has a very slightly horny shield, divided in the middle by a whitish line, which is also apparent on the following five or six segments. Body reddish-grey, strongly sprinkled with black points. Above on each side a paler line, which inwardly, at the beginning of each segment, has a shorter black streak, the individual streaks separated by a lighter reddish spot. The last two black streaks on segment 11 converge hindwardly. The horny ring round the spiracles is shining black. Forelegs yellowish, brownish at the tips. Abdominal legs whitish. The larva makes for itself a loose cocoon in the moss, wherein it remains for about three or four weeks as a pupa. The latter is 17—18 mm. long, chestnut-brown, and the not very strong, even "cremaster," has four spines, curved at the end, to which the larva skin remains hanging. I obtained, in the beginning of August, a number of young larvæ from the egg, which all ate *Vaccinium myrtillus* eagerly. They grew very little, and at the beginning of winter were still very small, only 6—8 mm. long. Unfortunately all died in the winter. Unless they grow more speedily in the north, it appears to me almost necessary that they must hibernate twice, for, at the end of May, when we found them full grown, it was still very cold, and their food-plant not yet in leaf, so that it was impossible they could have eaten much that spring. As confirmation of my opinion, we found also, at the end of June, several small

larvæ, which, however, perished, and it might be that their growth had been arrested through illness.—O. STAUDINGER (Translated from the Stettiner entomol. Zeitung, 1861, pp. 362, 363).

[We have thought that the above translated extract from Drs. Staudinger and Wocke's "Journey in Finmark," although published so long ago, may not be without interest at the present time. Mr. Meek sent, for our examination, a series of ten Scotch examples of *P. alpina*, and five from Finmark, received by him from Dr. Staudinger. These latter are remarkably constant, and the ground colour of the fore-wings may be called ashy-grey. The Scotch examples, on the contrary, are very variable, only one resembling the forms from Finmark; no two are alike, and, although a trace of the ashy ground colour usually remains, it is overpowered by brown or blackish suffusion, always, however, leaving the characteristic orbicular and reniform stigmata distinct, and sometimes filled in with reddish. One ♀, in particular, is a very beautiful insect, having a blueish-grey ground with dark black transverse lines, and longitudinal lines of black and blueish-grey, with a broad central black suffusion. Altogether, these insects fully bear out the character for variability that has caused Scotch *Lepidoptera* to be so much desired by continental entomologists.—EDS.]

*Description of the larva of Herminea grisealis.*—It is with great satisfaction I record my thanks to the Rev. Bernard Smith for his kindness in sending me this long desired larva, and enabling me to complete my figures of the genus; and, as no account of the larva has appeared since 1867, when *barbalis* was, by mistake, described for this species in No. 37 of "The Entomologist," at pages 223-4, I venture to think the following description may perhaps be acceptable.

The larva, found feeding on oak, I received September 15th, 1875, and for two days it continued to feed, and then spun a thin web of whitish-grey silk, which held the upper surface of the leaf folded together at the ends, and the sides also drawn together a little, so as to form a hollow in the middle of the leaf, wherein, on the 19th of September, it changed to a pupa, from which the moth, a male, came forth on 5th of June, 1876.

The full-grown larva is from one-half to five-eighths of an inch in length, the globular head smaller than the second segment, and this a little less than the other segments, which are in proportion moderately stout and cylindrical, the last segment tapering a very little. As to colour, the head is darkish brown, reticulated with darker, and without any gloss; on the second segment is a small, semi-lunar, dark brown, velvety plate, dorsally divided by a line of the general ground colour of the rest of the body, which is a dingy pinkish-grey, faintly freckled with darker; the dorsal stripe not very visible till the 5th segment, where it commences, and continues to be conspicuously broad and blackish, being rather widened in the middle of each segment, and becoming narrower on the two last segments; the sub-dorsal line is darker than the ground colour, and a little broken in character; the tubercular dots small and blackish, each in a ring of unfreckled ground colour, and bearing a fine hair; a broken line of darkish freckles runs along the spiracular region; the spiracles themselves black and roundish; the unfreckled belly a little paler than the back; the anterior legs tipped with black, the others with brown; just before spinning, the general colouring is more pink.

The pupa is about three-eighths of an inch in length, moderately stout, offering no conspicuous points of form or outline, very glossy and of a very deep chestnut-brown colour, paler at the abdominal divisions, and attached to the web by the tip of the tail, which is furnished with two central bristle-like spikes recurved at their extremities, and near their base surrounded with three or four others very much shorter and extremely fine.—WM. BUCKLER, Emsworth: *July 31st, 1876.*

*Description of the larva of Cryptoblabes bistriga.*—For this larva hitherto I believe unknown, I am indebted to the Rev. Bernard Smith, of Marlow, who kindly sent me, on the 12th of September, 1875, an example, then no more than a quarter of an inch long, within a folded oak-leaf: the leaf was, for a great portion of it, quite skeletonized, and the larva afterwards reduced other oak-leaves to a similar condition by eating holes through the substance between the veins, always keeping the sides of the leaf folded to within a quarter of an inch of each other by means of a quantity of lightly spun web; I noticed it was the upper surface that was generally thus folded together, though once the under surface was similarly treated for a residence.

The movement of the larva when walking is a short and jerky advance, with a slight pause after every step.

On the 23rd, it appeared to be full-fed, when I secured a figure of it, and the description which follows, and towards the end of the month it spun itself up in a brownish web, half an inch long, at the bottom of its cage, and the moth appeared in the evening of June 4th, 1876.

The full-grown larva is nearly five-eighths of an inch in length, moderately slender and cylindrical, though tapering a little from the third segment to the head, and a little more from the eleventh to the small anal tip, the segments well divided and sub-divided by a transverse wrinkle on each, the spiracular region much puckered, the ventral and anal legs fairly developed, but placed well beneath the body.

In colour, the head and back are lightish brown, marbled with rather a deeper tint of brown, the dorsal line yet deeper, the sub-dorsal line blackish-brown, followed by a line of the light brown colour, then by a broadish stripe of blackish-brown, and beneath this a broad band of cream colour having a brown line running through the middle of it; the belly and legs drab, which deepens under the thoracic segments to blackish-brown; the spiracles light brown and not easily seen; the small tubercular dots black, each bearing a fine hair; an ocellated spot of brown, with a black centre and a long hair, on either side of the third and twelfth segments.

The pupa, nearly four lines in length, is rather slender and of the usual shape, the surface of the abdomen slightly punctated, though smooth at the divisions; the tip ending with two curled-topped spines, the minute spiracles rather prominent and black, all the rest being of a dark reddish-brown and shining.—ID.: *August 1st, 1876.*

*Coleoptera at Aviemore, Inverness-shire, in July, 1876.*—During three weeks' stay at Aviemore in July last, I found a few interesting and rare species of *Coleoptera*, the majority of which, as might be expected, were similar to those found there by me in 1874, and recorded in E. M. M., xi, p. 64; still, a few species occurred that I had not then met with. The period of my visit this year being a fortnight later than in 1874, many moss and wood frequenting species did not put in an appearance, others that were very common in 1874 were very rare on this occasion.



I note below a few of the more interesting species that fell to my lot, avoiding, as much as possible, those previously recorded by me from this locality:—*Harpalus 4-punctatus*, Dej., sparingly under stones on the summit of a mountain, in company with *Miscodera*, *Tarus vaporariorum*, and other mountain species, and such commoners as *Harpalus latus*, *Calathus cisteloides*, *Olisthopus*, &c.; *Amara alpina*, one ♀ example of the reddish variety occurred in moss, and within a few yards of the spot where I captured it in 1874; *Staphylinus fulvipes*, one example under bark; *Tachinus elongatus*, a single specimen in the road; *Homalium brevicorne* and *pineti*, rarely, under fir bark; *Epuræa neglecta*, one example beaten from dead fir tops; *Omosita depressa*, not uncommon about the desiccated carcass of a sheep; *Dendrophagus crenatus*, rarely, under the bark of the Scotch fir, the head quarters of this species seemed to be in the glens, where large numbers of young firs are blown down and killed yearly by the wind; *Cryptophagus parallelus*, Bris., commonly, in company with *Tomicus bidens*, *acuminatus*, &c., by beating the dead fir tops left by the woodmen; *Atomaria badia*, one example crawling on a freshly cut log at the sawpit; *Corticaria serrata*, rarely, by beating dead fir tops; *Trichius fasciatus*, rarely, on *Orchis* flowers in the afternoon; *Melanotus castanipes*, sparingly, under fir bark and on the wing; *Salpingus ater*, rarely, in the dead fir tops; *Abdera triguttata* and *Zilora ferruginea*, both these species were very rare this year, though common enough in 1874; *Otiorhynchus maurus*, occasionally in abundance crawling on the roads; *Magdalinus duplicatus*, one example beaten from the Scotch fir, in company with *Brachonyx indigena*, which latter was very rare this time; *Astinomus ædilis*, common in the larva and pupa state under fir bark, though only two imagos occurred. *Leptura sanguinolenta*: I captured a ♀ example of this rare species running on a fir log, one of many barked by me; I am not aware of this species having been captured for many years in this country. There can, I think, be no doubt regarding the origin of this example, as it occurred in one of the wildest localities I ever visited.—G. C. CHAMPION, 274, Walworth Road, London, S.E.: Sept. 1st, 1876.

*Hemiptera at Aviemore*.—*Lygus rugicollis*, common on *Myrica gale*; *Plesiadema pinetellum*, Zett., two examples beaten from the Scotch fir (this species is recorded as British by Dr. O. M. Reuter, in the September No. of this Magazine); *Salda morio* and *conspicua*, Doug. & Scott, one example of each on the banks of a mountain loch; *Hydrometra Costæ*, not uncommon in the mountain lochs; *Corixa Wollastoni*, in similar localities to the preceding.—ID.

*Recent captures of Hemiptera*:—

*Phytocoris pini*, Kirschb. Common on Scotch fir-trees near Perth and Dunkeld in August.

*Tinicephalus obsoletus*, D. and S. Common on furze about Edinburgh, in August, but only females, the males having become defunct by lapse of time.

*Acompocoris alpinus*, Reut. ? On Scotch fir-trees at Dunkeld, August 26th (*vide* E. M. M., xii, 249).

*Liburnia Douglassi*, Scott. I took two examples of this rarity among the roots of rushes at Folkestone Warren, on the 5th inst.

*Tettigometra impressopunctata*, Duf. A single example out of a tuft of *Tusserium scorodonia* at Folkestone Warren, Aug. 29th, but, although I sought assiduously, I

could not get another: it may be that I had not found the proper habitat, or that the time was too late in the year. This is the third recorded British habitat of this scarce species, the others being Milford and the Isle of Wight.

*Eupteryx signatipennis*, Boh. Common on *Spiraea ulmaria*, near Morningside, Edinburgh, August 16th. It was only on the *Spiraea* growing in sheltered places that the *Eupteryx* was to be found.

*Eupteryx notatus*, Curt. Not uncommon among the herbage at Folkestone Warren, Aug. 30th, but, on account of its minuteness and activity, not easy to see and difficult to catch.

*Dicranoneura citrinella*, Zett., and *Eupteryx stachydearum*, Hdy., both abundant on *Teucrium scorodonia* near Edinburgh, and at Folkestone, in August.—J. W. DOUGLAS, Lee: September 16th, 1876.

*Captures of rare Coleoptera, Hemiptera, and Hymenoptera, at Chobham; including an Odynerus new to Britain.*—During this season, I have collected a good deal in the neighbourhood of Chobham, especially on the large tract of common to the north, known as Chobham Common, and, so far as I know, there are few localities better worth visiting, especially for those interested in the *Hymenoptera* and *Hemiptera*.

Below I give a list of the rarer species that I have found. The *Hymenoptera* were kindly named for me by Mr. F. Smith.

#### COLEOPTERA.

*Harpalus discoides*, two, under stones on Chobham Common; *Anisodactylus atricornis*, one, on the heaths; *Pterostichus lepidus*, occasionally; *Amara consularis*, one, under a stone; *Stenolophus brunnipes*, several, by evening sweeping, also in *Sphagnum*; these agree exactly with continental specimens of *brunnipes*, although it is quite possible that they may be only dark forms of *dorsalis*; *Homalota scapularis*, by sweeping, one specimen; *Gymnusa brevicollis*, in *Sphagnum*, several; *Lamprinus saginatus*, by sweeping, one specimen; *Philonthus nigrita*, in *Sphagnum*, several; *Lithocharis obsoleta*, by sweeping; *Bledius fracticornis*, in damp places; *Byrrhus murinus*, in a sand-pit; *Corymbites quercus*, by sweeping; *Sericosomus brunneus*, by sweeping; *Cardiophorus asellus*, at the roots of rushes; *Dryophilus anobioides*, by sweeping; *Meloe brevicollis*, crawling on the ground on the common; *Cistela ceramoides*, by beating a hedgerow; *Orchestes iota*, on *Myrica Gale*, not rare; *Tomicus dispar*, by evening sweeping.

#### HEMIPTERA.

*Gnathoconus picipes*, one specimen, on the heath; *Coryzus maculatus*, one specimen, off *Myrica Gale*; *Plosiomerus luridus*, very rarely, in very wet *Sphagnum* on the Common; *Calocoris ticinensis*, common, by sweeping in marshy places; *Systelolonotus triguttatus*, occasionally; *Chlamydatus pygmaeus* = *Tytthus insignis*, D. and S., one specimen, by sweeping rushes, but, unfortunately, not secured: I have subsequently found it abundantly at the roots of rushes on Wimbledon Common; *Macrocoleus tanacetii*, ♂ & ♀ on taney, the ♂ I believe has not been discovered before; *Nabis Poweri*, frequent at the roots of rushes in Gracious Pond; *Nabis flavomarginatus*, one developed and several undeveloped specimens found with *N. Poweri*; *Acanthia hirundinis*, commonly on the window-sills, &c., of a house at Chobham, round which were numerous martin's nests.

## HYMENOPTERA.

*Tapinoma erratica*, on the common; *Ceropales variegata*, one, by sweeping; *Miscophus bicolor*, ♂, one, by sweeping; *Astata stigma*, ♂, two, on a sandy spot on Chobham Common: this is, I believe, the first record of the capture of the ♂ in this country; *Andrena fucata*, two ♀, at flowers; *Andrena costana*, one ♂, by sweeping; *Odynerus reniformis*,\* Gmel., new to Britain, one specimen, ♂, but the exact locality not noted: I am indebted to Mr. Fredk. Smith for the discovery of this novelty amongst my captures; *Elampus Panzeri*, three, on rushes, by sweeping.—E. SAUNDERS, Wandsworth: September, 1876.

*Note on parasitic Acari.*—In the report of the proceedings of the Entomological Society given in your last number (September), there is an interesting account by Mr. McLachlan of some dragon-flies infested by red mites. He remarks that the history of these *Acari* is involved in much obscurity, as it is difficult to understand how they could all find access to dragon-flies if the parasite be necessarily limited to one group of insects, as its specific name of *libellula* would indicate.

Is it not probable that various insects, and even other allied animals, as Arachnidans, may be infested by the same mite?

The *Phalangiidae*, or harvest-men, are frequently found with a number of little bright red *Acari*, fixed to their long legs and bodies.† These have been named *Trombidium phalangii*, Dugès, others are termed *Tr. culicis*, *Tr. aphidis*, *Tr. libellula*, respectively, from the insects upon which they have been found; while another is designated *Tr. parasiticum*, because it has been met with upon various kinds of insects. These little parasites require more careful examination, for, according to Paul Gervais,‡ they vary in form if they are more or less distended with nourishment.

Dugès, who paid some attention to these Arachnidans, says,|| that all these parasitic kinds are only immature forms of mites, which, in their mature states, live a free and independent life. The parasites have only six legs, while all the perfect animals have eight. He more especially studied the history of the *Tromb. phalangii*, and says, that when full grown, these larvæ (?) detach themselves from their victim, fall to the ground, bury or hide themselves, and turn into smooth oval pupæ (?), like minute reddish-yellow eggs. They remain in this state, he says, for twenty days, and then emerge in the form of red, velvety, eight-legged mites, with free active movements. Numbers of these pretty little *Trombidii* may be found in moss and other situations, and it is a very interesting fact (if it can be fully proved) that they are all parasitic in their larva-state.—R. H. MEADE, Bradford: September 16th, 1876.

\* Description of *Odynerus reniformis*, ♂, translated from Saussure "Guêpes Solit.," p. 227.—♂. Clypeus bidentate, yellow, as well as the mandibles; the under-side of the antennæ yellowish, the spot under the wing, and that of the metathorax, very small or absent, the 6th abdominal segment with its band shortened at the sides. Legs almost entirely yellow, intermediate coxæ with a yellow spine. The ♀ is apparently very like the ♀ of *spinipes*, but differs by the yellow line of the clypeus, and the spots of the metathorax.

There is a good figure of the ♀ in Saussure, pl. xx, fig. 1. The ♂ may at once be known by the simple intermediate femora, and the long yellow spines on the intermediate coxæ.—E. S.

† See Monograph on the British species of *Phalangiidae*, by R. H. Meade, in *Annals and Magazine of Natural History*. Second Series, vol. xv, p. 393.

‡ Walckenaer, *Insectes aptères*. Vol. iii, p. 181.

|| See *Ann. des. Sci. Nat.* Series 1, vol. i, p. 36.

## Review.

A MONOGRAPH OF THE GEOMETRID MOTHS OR PHALENIDÆ OF THE UNITED STATES. By A. S. PACKARD, JUN., M.D., Washington: 1876. 4to, pp. 598, and 13 plates. (Forms Vol. x of Hayden's Report of the Geological Survey of the Territories).

Probably, this bulky volume is one of the most important that has ever been published on any family of *Lepidoptera*, and we regret that any remarks of ours can only do scant justice to the author, for a complete analysis would occupy many pages. It commences by an enumeration of the various sources whence the materials have been derived; then follows an exceedingly useful and critical examination of the different classifications of the group, from the 10th edition of the "Systema Naturæ" to the present time. To this succeeds an examination of the differential characters, and a very copious and careful exposition of the external anatomy, comparative and otherwise. This we regard as the most valuable portion of the whole work. Dr. Packard is evidently not one of those Lepidopterists who are afraid to "destroy" their insects by denuding the wings and bodies: in other words, he acts the rôle of comparative zoologist and not of collector. Plates i to vii are entirely occupied by admirably executed figures of anatomical detail. A few words on mimicry and terminology complete this introductory portion of the book. The purely systematic portion occupies the greater part of the remainder; finishing by interesting details on comparative geographical distribution. The plates of the insects, drawn by Mr. Trouvelot, are beautiful specimens of lithographic engraving, and when we state that some of the plates have nearly 100 figures on each, some idea will be gained of the enormous number of species represented. And neither care nor expense has been spared. Wherever it was desirable, extraneous aid has been sought, as, for instance, in the case of some of Walker's types in the British Museum, of which the author has had figures drawn by an artist in England, and sent out. Although the title somewhat erroneously states that the work represents the *Geometridæ* of the United States, it in reality includes the whole of America north of Mexico and the West Indies, and between 300 and 400 species are described and figured, though the estimated number of those existing is about 1000 (800 are included by Staudinger in the European Fauna). In glancing over the plates, one cannot help being struck by the great resemblance of many of the figures to those of European forms, and in fact, a large proportion of the genera are European. A not inconsiderable number of species (including some very familiar to English entomologists) are common to Europe and America, but more especially confined to those of northern distribution. Eighteen species are given as occurring both in temperate America and Europe. Another feature is the occurrence in the Pacific slope of forms similar to those of western Europe, but not eastern America, nor eastern Asia, a fact already sufficiently proved in other groups and orders of insects. Our author is a rigid adherent to the rule of priority, and from this cause the generic nomenclature is not in many cases the same as that now used in Europe, principally arising from the contested right of certain Hübnerian names. On one point we are at issue with Dr. Packard, and with many American entomologists. We allude to the practice of putting his own name after that of a species, when placed by him in a genus other than that adopted by previous writers. We fail to see the necessity of

this, and suggest that each species described in the book, whatever author's name it may bear after it, is in reality attributable to Packard, the authors' names being only required in the synonymy and bibliography.

Let us hope that this volume may be followed by others on the *Noctua*, *Pyralida*, &c., &c., of North America, and that these groups may find authors and artists as competent and painstaking as Dr. Packard and Mr. Trouvelot.

The sequential arrangement of the genera is somewhat novel, commencing with *Eupithecia* and ending with *Eugonia* (*Ennomos*), *Selenia* and Drepanoid forms. With regard to Walker's catalogues, Dr. Packard could not have spoken more to the point than when he alludes to them as having "only brought maledictions on the head of the amiable but uncritical author."

### Obituary.

*Trovey Blackmore* died at his residence, at Wandsworth, on the 3rd September, at the early age of 41. Several of his brothers and sisters, and his father, were carried off by consumption, and to this disease he himself succumbed. In his early years, he was at school at Epping, and used to visit the late Mr. Doubleday, to whose influence may perhaps be attributed the taste for Entomology that afterwards developed so strongly in him. Some years ago, the state of his health caused him to winter in Morocco, and this part of Africa he afterwards almost annually visited, devoting himself to a study of the Insect Fauna of the country, and making many and valuable discoveries, some of which are recorded in this Magazine. During last winter, he remained at home, and appeared to have so far recovered that we were scarcely prepared to hear of his death. Up to the last, he was engaged in writing a series of articles on insects injurious to cereals, some of which have already appeared in a journal devoted to the interests of the corn trade. Although naturally of a quiet and reserved disposition, he was full of wit and humour among his intimate friends, and his loss is deeply felt by them. In 1864, he was elected a Member of the Entomological Society of London.

*Edwin Brown.* In the death of this gentleman (which occurred suddenly from apoplexy, at Tenby, on the 1st September, at the age of 57), the naturalists of the Midland Counties, and especially of Burton-on-Trent, have sustained a great loss; as have his numerous friends in all parts,—for there are many who have spent pleasant days with him, and enjoyed his hospitality at Burton. His knowledge in all departments of Natural History was most extensive, and in a large room adjoining (and connected with) his residence, he had enormous stores of treasures, geological, zoological, and botanical, British and exotic. At the time of his death he was Manager of the Burton, Uttoxeter, and Ashbourn Union Bank, a position he had held for 25 of the 42 years during which he had been connected with the Bank, in Burton, where he was universally respected. He published little, yet, as long ago as 1842, a notice from his pen appeared in the "Annals." In 1863, he furnished the entomological portion of Sir Oswald Moseley's *Natural History of Tutbury*; especially valuable for a memoir on the anomalous genus *Acentropus*, of which he had discovered the larva some years previously, proving the insect to be Lepidopterous. Latterly, he had devoted himself to the study of *Carabida*, of which he had amassed a large and valuable collection; and a paper by him, on some Australian species, appeared

in the "Transactions" of the Entomological Society, which he joined in 1849. Only a few months ago, Mr. Brown lost his wife, after a long and painful illness, and, from all we can learn, this calamity tended to hasten his own death. We believe that his extensive library and collections will be sold; but we should rejoice to hear of their remaining in Burton, to which town they would be invaluable, as more than the nucleus of a Natural History Museum and Library.

ENTOMOLOGICAL SOCIETY OF LONDON: *September 6th, 1876.*—J. JENNER WEIR, Esq., F.L.S., in the Chair.

E. Boescher, Esq., of Bellevue House, Twickenham, was elected a Member.

Mr. E. Saunders exhibited sundry rare species of *Hymenoptera*, *Hemiptera*, &c., chiefly from Chobham, including a new species of *Odynerus* [see p. 114], *Astata stigma* ♂, and *Acanthia hirundinis*, of which bug he had taken many examples on a window-sill in the vicinity of nests of *Hirundo urbica*.

Mr. F. Smith exhibited a series of 60 bred examples of *Cræsus septentrionalis*, bred from larvæ on alder, found near Sidmouth. He also mentioned that Miss M. Paeley had recently found *Mutilla europæa* parasitic in the nests of *Bombus muscorum*, in Hampshire. A day or two before receiving this information, Professor Brandt, of St. Petersburg, had told him that he had found the species in the nests of the same bee, and this was the first instance, to his knowledge, of the insect being found parasitic in the nests of a surface-building *Bombus*.

Mr. Weir mentioned that he had recently been annoyed by the "harvest bug" (*Leptus autumnalis*) when on a visit to the South Downs, to such an extent, that there were as many as 80 on each foot. Some discussion ensued as to the best means of cure, and Mr. F. Smith said he had found almost immediate relief from a dose of "flour of sulphur," taken internally. Mr. Weir exhibited an example of *Lycæna Icarus* recently sent to him, with an appendage between the antennæ, which looked like the theca of some large moss, and he could not account for its being so attached. Mr. F. Smith noticed that the larvæ of *Pygæa bucephala* had recently proved very destructive to sweet chestnut.

With reference to an exhibition by Prof. Westwood (at the meeting held on July 5th; *vide ante*, p. 68) of twigs of horse-chestnut, apparently attacked by the larvæ of some moth, Mr. Stainton communicated a letter recently received from Sir Thos. Moncrieffe, accompanied by twigs attacked in precisely the same manner: it was stated that this was the work of squirrels, and Sir T. Moncrieffe said he had seen these animals at work splitting the twigs, in order to feed on the pith.

Prof. Westwood sent a communication to the effect that two Orthopterous insects, *Meconema varium* and *Xiphidium clypeatum* had been regularly taken on a pear tree in his garden at Oxford for five or six years. Mr. McLachlan remarked that *M. varium* was common round London, and regularly visited the sugared trees of Lepidopterists.

Mr. F. Smith read descriptions of three additional species of *Formicidæ* from New Zealand, sent to him by Dr. Sharp, since his paper on Mr. Wakefield's New Zealand ants had been read. Two of the species pertained to the genera *Amblyopone* and *Ponera*, new to the Fauna.

Dr. Sharp communicated a list of localities for Amazonian *Staphylinidæ*, discovered by Dr. Trail, the descriptions of which appeared in his work on the *Staphylinidæ* of the Amazons Valley.

Prof. Westwood communicated "Notæ Dipterologicæ," Nos. ii and iii; the first treating on the genus *Systropus*, with the economy of one species noticed; the second on *Acroceridæ*.

DESCRIPTIONS OF NEW *CUCUJIDÆ* AND *CLERIDÆ*.

BY CHAS. O. WATERHOUSE.

*CUCUJIDÆ*.

## HECTARTHURUM.

I have had occasion to examine the numerous specimens of this genus in the British Museum, but I regret to say with no very satisfactory results. Among them, however, I find a few tolerably well-defined species, which are at present undescribed, and of which I subjoin diagnoses. The species may be tabulated as follows; it being understood that the *humeral stria* reaches from the shoulder nearly to the apex; the *dorsal stria* is close to the humeral stria, but nearer to the suture; the *lateral stria* is midway between the humeral stria and the margin. All the species have a *sutural stria* which joins the *marginal stria* at the apex.

I. Antennæ with the 3rd to 10th joints notched at their apex below.

A. Elytra with humeral stria only well-defined.

a. Femora and apical spot to the elytra red (W. Africa).

Thorax distinctly broader in front ..... *gigas*, Fab.

Thorax very little " " " ..... *curtipes*, Newm.

b. Uniform black, narrow (Java) ..... *bistriatum*, Cast.

B. Elytra with humeral stria, and a very short dorsal stria.

a. Frontal furrows closed in front; channel on the under-side of the head near the base of the antennæ turned away from the eye posteriorly (India) ..... *depressum*, Sm.

b. Frontal furrows more or less open in front; channel below the head extended to the eye.

\* Elytra with fine lateral stria (E. Indies) ... *brevifossum*, Newm.

\*\* Elytra with abbreviated lateral stria at base (Australia) ..... *australicum*, sp. n.

\*\*\* Elytra without lateral stria (Australia) ..... *cylindricum*, Sm.

C. Elytra with humeral and dorsal striæ nearly entire.

a. Thoracic stria interrupted posteriorly.

\* Elytra with one sutural stria.

† Clypeus with central shallow impression not bounded on each side by a distinct ridge (Indies).

§ Body convex.

Elytra with very short lateral stria ..... *trigeminum*, Newm.

Elytra without lateral stria ..... *sociale*, sp. n.

§§ Body very depressed ..... *dejectum*, sp. n.

†† Clypeus with impression bounded on each side by a distinct ridge (Natal) ..... *simplex*, Murr.

\*\* Elytra with a second sutural stria.

† Thorax without discoidal impressions ..... *quadrilineatum*, Sm.

†† Thorax with two short discoidal impressions. *gemelliparum*, Newm.

♂. Thoracic stria entire; elytra with two sutural striæ.

Uniform black; sub-depressed ..... *uniforme*, sp. n.

Elytra pitchy-red; cylindrical..... *semifuscum*, Newm.

II. Antennæ with the 3rd to 10th joints coriaceous below and fringed with hair.

Elytra with humeral and lateral striæ entire, dorsal

stria short ..... *penicillatum*, sp. n.

NOTE.—*H. heros*, Fab., and *rustipennis*, Fab., are unknown to me, and I have not been able to see the description of *H. latum*, Grouvelle.

### H. GIGAS and H. CURTIPES.

These two species are extremely close, but I think certainly distinct. The one which I believe to be *gigas* is a little broader and less convex than *curtipes*, and has the thorax a little broader in front.

### H. BREVIPOSSUM.

This species seems to vary from four lines to eight lines in length. Specimens in the British Museum collection are from India, Java (type), Borneo. From these I have separated as varieties a series which appear rather narrower and more elongate, and have the antennæ a trifle more slender. They come from Siam, Tenasserim, Birmah, Timor, and the Philippines, with a doubtful one from Amboyna. They measure from three to seven and a half lines in length, the extremes being both from the Philippines.

A single specimen from West Australia (four lines), I am unable to separate from this species.

### HECTARTHUR AUSTRALICUM, sp. n.

Entirely black, rather broad, and very slightly convex. Thorax in front very nearly as broad as the length; lateral striæ distinct, entire. Elytra with the humeral stria entire, the dorsal and lateral striæ very short. ♂.

*Hab.*: North Australia.

Brit. Mus.

This species differs from *H. cylindricum* in being relatively broader, and in having the thorax more distinctly broader in front; in *H. cylindricum* the sides of the thorax are nearly parallel in front, and the elytra have no lateral stria.

### HECTARTHUR SOCIALE, sp. n.

Thorax with the lateral stria interrupted behind. Elytra with the humeral and dorsal striæ well marked and nearly entire; no lateral stria. Femora pitchy. ♂.

Long. 9½ lin.

*Hab.*: New Guinea (Wallace).

Brit. Mus.

*Var. minor*, ♀.

Long. 4½—5 lin.

*Hab.*: Java, Philippines.

Brit. Mus.



### HECTARTHURUM DEJECTUM, *sp. n.*

Very depressed and rather broad. Uniform black. Lateral stria of thorax interrupted behind. Elytra with the humeral and dorsal striæ well defined; lateral stria absent. ♀.

Long.  $6\frac{1}{2}$  lin., lat. 2 lin.

This species is separated from *H. sociale* on account of its depressed form; the thorax is, moreover, more regularly widened in front. The joints of the antennæ, seen from below, are a little elongate, and the triangular notch on the 7th to 10th joints is very large and opaque.

*Hab.* : Batchian.

Brit. Mus.

NOTE.—*H. trigeminum*, *sociale*, and *dejectum* have no fovea in the centre of the posterior margin of the thorax.

### HECTARTHURUM GEMELLIPARUM, Newm.

Mr. [Murray seems to have overlooked the description of this species, and has evidently re-described it under the name of *H. Smithii*.

### HECTARTHURUM UNIFORME, *sp. n.*

Rather depressed. Thorax with the lateral stria entire; no central fovea to the posterior margin. Elytra with a second sutural stria, and the humeral stria entire; the dorsal stria well marked, but slightly abbreviated behind; the lateral stria is faintly indicated. The antennæ are very long (♀), the 3rd to 10th joints are a little elongate (especially the 5th and 6th), and are oval in their lateral outline, the 11th joint is elongate and arched.

Long. 5 and  $6\frac{1}{2}$  lines.

This species has the triangular notch at the apex of the antennal joints below, very small and almost reduced to a puncture.

*Hab.* : South India.

Brit. Mus.

### HECTARTHURUM PENICILLATUM, *sp. n.*

*Nigrum, nitidum, depressum; antennis longis, subtus rugulosis et penicillatis; elytris stria humerali haud abbreviata, dorsali brevi, laterali (haud bene impressa) apicem attingenti.*

Long.  $8\frac{1}{2}$ — $9\frac{1}{2}$  lin.

Head with a slight obtuse tubercle immediately above the clypeal impression. Antennæ longer than the head and thorax together, the 3rd to 10th joints compressed and narrowed at their base, these joints more or less coriaceous below and fringed with stiff ferruginous hairs. Thorax with the lateral stria very slightly impressed behind. Elytra with one sutural stria; the humeral and lateral striæ entire (the latter very lightly impressed), the dorsal stria much abbreviated.

*Hab.* : Abyssinia.

Brit. Mus.

This species somewhat resembles *H. brevifossum*; it is rather broader and more depressed, and is at once separated from all the species of the genus by the structure of the antennæ, which may possibly necessitate the formation of a new genus for its reception.

ANCISTRIA TARSA LIS, *sp. n.*

*Elongata, cylindrica, nigra, nitida; capite utrinque evidenter punctato, punctis elongatis obliquis; thorace sat crebre evidenter punctato; elytris apice retuso; tarsorum anteriorum articulo primo gracili, tibiâ longiori.*  
*Long. 4½ lin., lat. ½ lin.*

Closely resembles *A. retusa*, but is much longer and narrower. The punctures at the side of the head above the eye are elongate, oblique, and almost confluent. The thorax is relatively longer and the punctuation rather less strong, moderately close. The apex of the elytra is hollowed out in the same manner, but the apex of each elytron is somewhat acuminate. The basal joint of the anterior tibia is remarkably long and slender, longer than the tibia, about equal in length to the following joints taken together.

*Hab.*: Java (Bowring).

Brit. Mus.

HEMIPEPLUS, Latr. (1825), 1829.

*Ochrosanis Dohrni*, Pascoe, 1866, = *hemipterus*, Dej., MS.

The type of *Hemipeplus* is now in Mr. Janson's collection, I have carefully examined it, and am convinced that the shortness of the elytra is only accidental; it agrees in all other respects with a specimen in the British Museum, which I have determined to be *Ochrosanis Dohrni*, Pascoe. Length 4½ lin. The Museum example measures barely 4 lines, but it agrees perfectly with Mr. Pascoe's figure and description.

Dr. Le Conte suggests (Proc. Ac. Phil., 1873, p. 328) that *Ochrosanis Dohrni* is his *Hemipeplus marginipennis* (which only measures ⅔ inch). The form of the thorax is, however, quite different in the two insects.

HEMIPEPLUS (NEMICELUS) MARGINIPENNIS, Dej.

The Dejeanian specimen of this species is now in Mr. Janson's collection. The following diagnosis is drawn up from a specimen in the National collection, agreeing perfectly with Dejean's.

*Valde elongatus et depressus, parallelus, testaceus, nitidus; capite cum oculis thorace paulo latiori, pone oculos subito angustato; thorace latitudine ½ longiori, lateribus antice rotundatis, postice sub-sinuatis, pone medium angustato, fovea utrinque prope basin impresso; elytris punctulatis, margine laterali infuscato.*  
*Long. 3 lin.*

*Hab.*: Florida.

My object in describing this is, that I believe it to be quite distinct from the species described under the same name by Dr. Le Conte, which he says is two-tenths of an inch in length, and of which there

are specimens named by Dr. Le Conte in the British Museum (from Florida), which only measure two-twelfths of an inch. The small specimens differ from the large one above described, in having the eyes less prominent; the head not immediately narrowed behind the eyes, but having, as it were, rectangular cheeks; the sides of the elytra less suddenly deflexed, and the deflexed portion not bounded above by a fine carina.

In the event of the larger insect proving to be distinct from that described by Dr. Le Conte, it may be convenient to designate it *Dejeanii*.

I think that the following synonyms will be found correct:—

CRYPTAMORPHA, Woll., 1854.

*Pseudophanus*, Le C., 1859.

*Parabrontes*, Redt., 1867.

1. *Desjardinsii*, Guér. (*Psammæcus*), 1844.

*suturalis*, White (*Dendrophagus*), 1846.

*musæ*, Woll. (*Cryptamorpha*), 1854.

*signatus*, Le C. (*Pseudophanus*), 1859.

*fasciatus*, Redt. (*Telephanus*), 1867.

2. *brevicornis*, White (*Dendrophagus*), 1846.

*silvanoides*, Redt. (*Parabrontes*), 1867.

? *umbrinus*, Smith (*Dendroph.*), 1851 (immature).

With regard to *Telephanus fasciatus*, Redt., it must be observed that I have placed it in the above synonyms with some hesitation. Redtenbacher was well aware that *Telephanus* should have securiform palpi, which his *T. fasciatus* would not, if the above synonymy be correct. On the other hand, he mentions the longitudinal furrows on the head, a character well marked in *Cryptamorpha*, but not existing in any *Telephanus* with which I am acquainted.

CRYPTAMORPHA FASCIATA, Woll., Ent. Mo. Mag., 1874.

The description of this species agree perfectly with the type of *Monotoma concinnula*, Walker, 1859. There are numerous specimens of this insect in the Museum collection from Ceylon, Hong Kong, and single examples from Java and Sierra Leone.

I had formerly placed this insect with doubt with *Telephanus*; it, however, has not the palpi securiform (as they are in all the above described species), and it is, therefore, better associated with *Cryptamorpha*, although I much object to placing it in this genus, as it wants the strong longitudinal furrows on each side of the head, which is a feature in the genus.

CRYPTAMORPHA TRIGUTTATA, *sp. n.*

*Elongata, sat depressa, testacea, nitida, breviter pubescens; capite triangulari, subtiliter coriaceo, fronte utrinque longitudinaliter canaliculata; thorace capite paululo angustiori, latitudine paulo longiori, crebre fortiter punctato, lateribus fere parallelis, ante basin paulo sinuatis, nigris; elytris thorace  $\frac{1}{2}$  latioribus et  $2\frac{1}{2}$  longioribus, fortiter striato-punctatis, sat parallelis, ad apicem rotundato-angustatis, maculis tribus nigris notatis; antennarum articulis 9 et 10 femoribusque piceis.*

*. Long.  $1\frac{1}{2}$  lin., lat. vix.  $\frac{1}{2}$  lin.*

This species, which appears to me to belong undoubtedly to this genus, has the antennæ rather long and hirsute, scarcely thickened at the apex; the head has the usual strong furrow on each side, and outside this an oblique furrow running towards the eye. Thorax a little narrowed at its base, but with the sides sub-parallel, or only very slightly arcuate, and all the angles obtuse. Each elytron has a small round black spot on the disc behind the middle, and an elongate spot on the suture near the apex.

*Hab.:* S. Australia.

Brit. Mus.

TELEPHANUS PICTUS, *sp. n.*

*Obscure piceus, sub-nitidus, flavo-pubescens; antennis testaceis, articulis 7—10 infuscatis; capite crebre fortiter punctato, oculis prominulis; thorace capite (cum oculis) haud angustiori, latitudine paululo breviori, postice regulariter angustato, crebre fortiter punctato, lateribus rectis, breviter 5 vel 6 denticulatis; angulis anticis rotundatis; elytris thorace vix duplo latioribus et triplo longioribus, fortiter striato-punctatis, lateribus leviter arcuatis, singulo elytro maculis duabus rotundatis flavis notato; pedibus pallide testaceis.*

*Long.  $1\frac{1}{2}$  lin., lat.  $\frac{3}{4}$  lin.*

The punctuation of the head and thorax is very strong, but the punctures, although close, are not confluent. Each elytron has two large pale spots.

*Hab.:* Borneo (Wallace).

Brit. Mus.

TELEPHANUS SPINICOLLIS, *sp. n.*

*Elongato-ovalis, sub-nitidus, flavo-pubescens, rufo-piceus; antennis articulis (8 vel) 9 et 10 nigris, capite confertim fortiter punctato; thorace capite paulo latiori, longitudine  $\frac{1}{2}$  latiori, nigro, confertim sat fortiter punctato, postice angustato, angulis anticis rotundatis, lateribus vix arcuatis, breviter 6 vel 7 acute spinulosus; elytris thorace  $\frac{1}{2}$  latioribus et  $2\frac{1}{2}$  longioribus, fortiter striato-punctatis, lateribus bene arcuatis, nigris, fascia lata prope basin maculaque suturali, sub-apicali, rufo-piceis.*

*Long.  $1\frac{1}{2}$  lin., lat.  $\frac{3}{4}$  lin.*

Relatively shorter and broader than the preceding. The punctuation of the head and thorax is rather strong and very close, having a tendency to be confluent, that on the head longitudinally, on the thorax transversely. The thorax is distinctly transverse, margined in front. The elytra are rather strongly arcuate at the sides, and are relatively shorter than in the preceding species.

*Hab.* : Aru (Wallace).

Brit. Mus.

TELEPHANUS FELIX, *sp. n.*

*Elongato-ovalis, nitidus, pubescens; antennis obscure testaceis, articulis (6 vel) 7-9 piceis, 10 et 11 albidis; capite piceo, crebre distincte punctato; thorace capite paululo latiori, longitudine  $\frac{1}{2}$  latiori, postice angustato, piceo, crebre fortiter punctato, antice arcuato, haud marginato, angulis anticis rotundatis breviter tri-tuberculatis, lateribus ante medium rotundatis, postice fere rectis; elytris fortiter lineato-punctatis, thorace  $\frac{1}{2}$  latioribus et  $2\frac{1}{2}$  longioribus, pone medium arcuatim attenuatis, testaceis, fascia dentata pone medium apiceque nigris; pedibus testaceis.*

*Long.*  $1\frac{1}{2}$  lin., *lat.*  $\frac{1}{2}$  lin.

The punctuation of the head and thorax is very distinct and very close. The thorax is considerably narrowed behind, the sides are not denticulate, but there are two or three minute tubercles at the anterior angles; the margins are slightly impressed above. The elytra are rather short and broad, narrowed only behind the middle.

*Hab.* : Ceylon.

Rather a short, broad species, having the elytra broad at the base and somewhat suddenly narrowed behind the middle.

TELEPHANUS INCOMMODUS, Walker.

*Cucujus? incommodus*, Walker, 1859.

This is very close to *T. felix* above described. It differs in being entirely testaceous except the 7th to 10th joints of the antennæ which are pitchy; there are also slight traces of fuscous at the apex of the elytra. The thorax is somewhat narrowed posteriorly, the sides nearly straight posteriorly, and furnished with five very small teeth.

*Hab.* : Ceylon.

Brit. Mus.

The type is immature, and in a very injured condition.

TELEPHANUS TRIMACULATUS, Mots., 1858.

I think *Psammæcus trimaculatus*, Mots., should be associated with the above species, and it appears to me that *T. incommodus* may be only a variety of it. Upon a close examination, there appears to be a trace of a spot on the middle of the elytra in Mr. Walker's type.

*Hab.* : Ceylon.

TELEPHANUS CRUCIGER, *sp. n.*

*Testaceus, brevis, nitidus, pubescens; antennis corpore paulo brevioribus, articulis 7-10 infuscatiss; capite sat crebre evidenter punctato; thorace capite paulo latiori, longitudine  $\frac{1}{2}$  latiori, convexo, crebre fortiter punctato, angulis rotundatis, lateribus arcuatim rotundatis, evidenter quinque-dentatis; elytris thorace  $\frac{1}{2}$  latioribus, brevibus, ad apicem arcuatim rotundatis, fortiter striato-punctatis, basi vix infuscatiss, fascia undulata maculaque suturali suturali nigriss.*

*Long.  $1\frac{1}{2}$  lin., lat.  $\frac{1}{2}$  lin.*

A short broad species, differing from all the preceding in not having the thorax more narrowed behind than in front. The elytra are about one-fourth longer than broad, not distinctly rounded at the sides.

*Hab.* : Dorey, New Guinea (Wallace).

Brit. Mus.

Two examples from Siam only differ from the above in wanting the apical spot to the elytra. The elytra appear a trifle longer, but I prefer considering this a mere variety, at least for the present.

TELEPHANUS ANTENNATUS, *sp. n.*

*Testaceus, brevis; antennis corpore haud brevioribus, unicoloribus; thorace transverso, ad basin paulo angustiori, lateribus evidenter quinque-denticulatis, denticulis duobus anterioribus brevibus; elytris fascia undulata maculaque suturali sub-apicali nigriss. Long.  $1\frac{1}{2}$  lin., lat.  $\frac{1}{2}$  lin.*

Closely resembles *T. cruciger*, but differs in having the antennæ as long as the whole body and unicolorous. The thorax is a little narrowed behind, with five teeth at the side, the two anterior approximate and very small.

*Hab.* : Dorey, New Guinea (Wallace).

Brit. Mus.

CLERIDÆ.

SISYRNOPHORUS, *g. n.*

General form somewhat that of *Epilachna*, but with the head and thorax narrower. Very convex, pubescent. Antennæ about as long as the head and thorax together, slightly thickening from the 5th joint to the apex. Eyes reniform, not prominent. Thorax very convex, straight in front, entirely rounded behind (resembling a horse's hoof, with the rounded part contiguous to the base of the scutellum). Elytra ample, twice as broad as the thorax, nearly circular in outline, emarginate-truncate at their extreme base.

Closely allied to *Allochotes* (Westw., Trans. Ent. Soc., 1875), and separated from that genus on account of the form of the thorax.

## SISYRNOPHORUS MACULATUS, sp. n.

*Testaceo-ferrugineus, convexus, nitidus, pubescens; thorace maculis tribus, scutello, elytrisque maculis rotundatis octo, nigris.*

*Long. 4 lin., lat. 3½ lin.*

Head sub-rotundate, not very convex, with fine punctures not thickly scattered over the surface; eyes moderately large, but not prominent; antennæ with the 5th joint scarcely as broad as long, the 6th to 10th joints very gradually a little shorter and stouter. Thorax distinctly broader than the head, very convex, finely and moderately thickly punctured, one-fifth broader than long, very gently narrowed in front, entirely rounded behind, finely margined, the anterior angles a little less than right angles; a discoidal spot and a smaller spot on each side black. Elytra twice as broad as the thorax, about as long as broad, very convex and ample, broadest across the middle, gently rounded at the sides and apex; each elytron arched and gently sinuous at the base, with four rather large round black spots, one humeral, one marginal, and two near the suture.

Head and thorax sub-retractile.

*Hab.*: Philippine Islands:

Brit. Mus.

## SISYRNOPHORUS BOWRINGII, sp. n.

*Fulvo-testaceus, nitidus, longe pubescens.*

*Long. 2 lin., lat. 1½ lin.*

Head not thickly, and very finely, punctured. Thorax very convex, extremely finely and not thickly punctured, very slightly narrowed in front, entirely rounded and margined behind, anterior angles a little less than right angles, blunted. Elytra very convex, nearly circular in outline, slightly truncate at their base, each elytron arched at its base, with the surface moderately thickly and very distinctly punctured.

*Hab.*: Penang (J. C. Bowering, Esq.).

Brit. Mus.

British Museum: *September 6th, 1876.*

---



---

 DESCRIPTIONS OF HITHERTO UNCHARACTERIZED PHYTOPHAGA.

BY JOSEPH S. BALY, F.L.S.

(continued from page 10.)

## Fam. HISPIDÆ.

## CALLISPA ELEGANS.

*Oblongo-ovata, subdepressa, rufo-fulva, nitida, antennis nigris; elytris sat fortiter punctato-striatis, striis apicem versus tenuiter punctatis; plagâ magnâ læte cyanedâ, partem dimidiam posticam fere amplectente, ornatis.*

*Long. 2 lin.*

*Hab.*: Sumatra, Pulo Penang.

Antennæ half the length of the body, entirely black. Thorax twice as broad as long, sides straight and parallel in the ♂, slightly converging from base to apex in

the ♀, suddenly rounded and converging at the extreme apex in both sexes; anterior angles very obtuse, ill-defined, hinder angles rectangular; upper surface longitudinally excavated on either side, surface of the excavations deeply variolose-punctate; disc smooth, remotely punctured, the punctures arranged in irregular longitudinal rows. Elytra broader than the thorax, oblong, their apices broadly rounded; above strongly punctate-striate, the punctures finer and less deeply impressed towards the apex; the hinder half of the elytra covered with a large, common, cyaneous patch, usually abbreviated on the extreme lateral and apical margins, but sometimes extended, so as to entirely cover the former.

#### CALLISPA AFRICANA.

*Elongata, subdepressa, picea, nitida, antennis nigris, articulis intermediis piceis, thorace, abdomine, femoribus, tibiisque obscure flavis; thorace varioloso-punctato, medio utrinque transversim excavato; elytris sat fortiter punctato-striatis, fusco-violaceis, metallico-nitentibus.*

*Long. 2 lin.*

**Hab.:** Banks of the Niger.

Vertex smooth, its hinder portion impressed with a few fine variolose punctures; antennæ not half the length of the body, slender, slightly thickened towards the apex, four or five intermediate joints pitchy, the rest black, second joint rather longer than the first, the third equal in length to the two preceding united. Thorax twice as broad as long, sides parallel at the extreme base, thence rounded and converging to the apex, anterior angles produced, acute; above, depressed, excavated across the middle on either side, leaving a narrow ill-defined central ridge; at the base, just in front of the scutellum, is a smaller depression; surface impressed with large round variolose punctures. Elytra scarcely broader than the thorax, parallel, their apices regularly rounded.

#### HISPOPIA TERMINALIS.

*Oblongo-elongatula, depressa, fulva, nitida, genubus tarsisque piceis, antennis elytrorumque dimidio postico nigris.* *Long. 4½ lin.*

**Hab.:** Mindanao.

Head finely rugose-punctate, neck shining, impunctate, transversely impressed behind the eyes; antennæ half the length of the body, entirely black. Thorax about one-third as broad again as long, sides straight and very slightly diverging from the base to before the middle, thence obliquely converging to the apex, the outer margin irregularly dentate; above, flattened, sub-cylindrical at the extreme apex, disc covered with large round shallow punctures, the apex, together with a longitudinal space on the middle of the disc, free from punctures. Scutellum oblong-ovate, sinuate on the sides, the apex obtusely rounded. Elytra narrowly oblong, sides parallel, here and there faintly notched, sub-acutely rounded at the apex, each elytron with its extreme apex emarginate, and the sutural angle armed with a small acute tooth; upper surface deeply and regularly punctate-striate, interspaces minutely granulose, plane, slightly thickened on the outer disc and towards



the apex. Anterior pair of thighs thickened, armed beneath with a strong tooth; anterior tibiae curved, gradually thickened from base to apex, the latter produced inwardly into a strong spine.

#### PROMECOTHECA CALLOSA.

*Elongata, subcylindrica, nigra, nitida, elytris fulvis, profunde foveolato-striatis; thorace basi strangulato, utrinque in callum obtusum magnum producto.* Long.  $4\frac{1}{2}$  lin.

Hab.: Australia, Port Essington.

Vertex smooth, impunctate; antennae slender, more than half the length of the body. Thorax longer than broad, subcylindrical, strangulated posteriorly, produced on either side into a large obtuse callosity, basal margin impressed with a deep transverse groove; disc smooth and shining, nearly impunctate, only a few minute punctures being visible on the sides in front, on the lateral callosities. Scutellum triangular, excavated near the apex, the latter truncate. Elytra broader than the thorax, parallel, obliquely rounded at the apex, the apices conjoined obtusely angulate; upper surface deeply foveolate-striate, clothed at the apex with a few coarse hairs. Four hinder thighs armed beneath with a stout spine near the apex.

#### DOWNESIA STRIGICOLLIS.

*Filiformis, subcylindrica, nigra, subtus nitida, supra sub-opaca, abdomine flavo; thorace subquadrato, disco utrinque oblique deflexo, longitudinaliter sulcato-strigoso; elytris elongatis, profunde punctato-striatis, singulatim tricarinatis, carinis duabus internis medio fere obsoletis.* Long.  $2\frac{1}{2}$  lin.

Hab.: Cochin China.

Face distinctly punctured between the eyes, vertex smooth, impunctate. Thorax rather longer than broad, subquadrate, sides parallel, very slightly dilated at the base, notched at the hinder angle, the latter armed with a fine lateral tooth; anterior angles nearly rectangular, their apices obtuse; basal margin impressed with a deep transverse groove, apical border sub-cylindrical, impressed with a single row of punctures; disc divided on the medial line into two oblique planes, the surfaces of which are closely covered with slightly oblique longitudinal grooved strigae; these planes meet at an angle on the middle of the disc, and form at the point of junction a distinct ridge which extends longitudinally for the whole length of the thorax. Scutellum small, triangular. Elytra scarcely broader than the thorax, parallel, very slightly dilated behind the middle, apices obtusely rounded, each emarginate at the sutural angle, apical margin very finely serrulate; above deeply punctate-striate, each elytron with three elevated carinae, the two inner only visible at the base and apex, apex of suture also carinate, interspaces each with a single row of punctures, hinder half of the second, together with the whole extent of the third, impressed with a second row. Tibiae thickened, anterior pair with the upper edge notched, compressed and dilated at the base.

## PRIONISPA GEMMATA.

*Cuneiformis, subdepressa, pallide picea, nitida, pedibus pallide fulvis; suprâ metallico-viridis, antennis pallide piceis; thorace crebre foveolato; elytris profunde foveolato-striatis, ad apicem costis nonnullis instructis, late (basi exceptâ) piceo-limbatis. Long. 2 lin.*

Hab.: Batchian.

Front produced between the antennæ into an angular projection, lower portion of vertex coarsely punctured, eyes bordered above by a distinct groove. Thorax subcylindrical, scarcely broader than long, sides straight and parallel, notched at base and apex, anterior angles armed with an obtuse tooth; disc closely covered with large round foveate punctures, their interspaces granulose; on the medial line is a longitudinal groove. Scutellum narrowly oblong, its apex obtuse. Elytra much broader at the base than the thorax, oblong, gradually dilated from base to apex, the latter truncate, its outer angle produced laterally into a large, flat, triangular, obtuse spine, upper surface depressed along the inner disc, the humeral callus laterally prominent; flattened surface bounded on its middle third by a large oblong excavation, the inner edge of which is costate; apex of elytron with several short longitudinal costæ; surface regularly and deeply foveolate-punctate; interspaces finely granulose-punctate, those on the outer disc thickened and subcostate; surface of excavation smooth and shining, not granulose, more or less tinged with golden. Anterior pair of tibiæ armed with a short spine within, near the apex.

Dr. Chapuis has described two species of this genus; one, *P. nitida*, from Java, has been previously characterized by Guérin under the name of *Hispa sexspinosa*.

## GONOPHORA CHAPUISI.

*Elongata, postice vix ampliata, dorso depresso, fulva, nitida, antennis elytrisque pone medium nigris; thorace ante basin transversim excavato, disco lævi, medio longitudinaliter sulcato, utrinque foveis nonnullis magnis impresso; elytris profunde punctato-striatis, interstitiis alternis elevato-costatis. Long. 2½ lin.*

Hab.: Philippine Islands.

Antennæ slender, three-fourths the length of the body, two lower joints short, equal in length, the basal one sub-globose, piceous; third joint nearly as long as the two preceding united, the fourth about equal in length to the third. Thorax broader than long, sides nearly parallel at the base, rounded in the middle, converging and slightly sinuate at the apex; above, convex, deeply and broadly excavated transversely at the base; disc smooth, impressed in the middle with a short longitudinal groove, and on either side with several deep foveate punctures. Elytra broader than the thorax, very slightly increasing in width towards the apex, the latter regularly rounded, lateral margin minutely serrulate; upper surface deeply and strongly punctate-striate, the suture and each alternate interspace strongly costate, the third costa less elevated than the rest, and obliterated for a great portion of its length; interstices between the punctures transversely costulate.

Warwick: September, 1876.

ON CERTAIN BRITISH *HEMIPTERA-HOMOPTERA*.*Description of a species of the Genus LIBURNIA new to Great Britain.*

BY JOHN SCOTT.

## LIBURNIA FLAVEOLA.

*Delphax flaveola*, Flor, Rhyn. Livl., ii, 72, 19; Kirschb., Cicad., 33, 31, ♀.

♀ Undeveloped.

Yellow or somewhat ferruginous.

*Head*—*crown* more or less ferruginous, foveæ shallow, but distinct. *Face* more or less ferruginous; central longitudinal keel acute; disc on either side of the keel, flattish concave. *Clypeus* more or less ferruginous. *Eyes* brown. *Antenna* brown; 1st and 2nd joints yellow or ferruginous. *Ocelli* black. *Rostrum*—apex black.*Thorax*—*pronotum* and *scutellum* yellow or inclined to ferruginous. *Elytra* pale yellow, transparent, about one-half the length of the abdomen, apex broadly rounded. *Legs* yellow. *Claws* dark brown.*Abdomen* yellow or ferruginous.

♀ Developed.

*Elytra* pale, transparent; nerves pale, finely granulated. *Membrane*: marginal and inner nerves slightly brownish. All the other characters as in the undeveloped form.

Length, 1½ line undev., 1½ dev.

Most nearly allied to *L. straminea*, Stål, a species not yet ascertained to be British. The distinction between the two insects is easiest to be observed by the examination and comparison of the genitalia of the ♂.

Two specimens captured by Dr. Power, on Barnes Common, in July last.

Lee: *August 19th*, 1876.

## ON MELANISM.

BY EDWIN BIRCHALL, F.L.S.

It is well known that specimens of many *Lepidoptera* from the Highlands of Scotland vary widely from English examples of the same species, and that the variation is usually towards a darker coloration; that there is, in short, a tendency to the production of melanic varieties, and that in some cases a dark variety has completely supplanted the lighter coloured type; but, so far as I know, no satisfactory explanation of these facts has been suggested, none at least which covers the whole ground. It has been said that the production of

melanic varieties in Scotland is caused by the existence of iron in the soil in large quantities, by the excessive moisture of the climate, or by the absence of sunshine; as a matter of fact, I do not know that there are any large deposits of iron ore in the Highlands, and even supposing any or all of the suggested explanations to be coincident with the existence of melanism, it is still needful to show their connexion with it as cause and effect, which has not been attempted.

It must further be noted, that melanic varieties of *Lepidoptera* occur very commonly in Ireland, the Isle of Man, Durham, South Lancashire, and the West Riding of Yorkshire, under various conditions of climate and soil.

Near Leeds, *Aplecta nebulosa* and *Xylophasia polyodon* are often perfectly black, and the "black pepper" (*Biston betularia*) is as well known in the woods as its namesake is in the store-room.

Near Manchester, the melanic variety of *Biston betularia* has become very common of late years, and threatens to supplant the typical form. I quote the following from a note in Newman's "Entomologist," vol. ii, p. 150, by the late R. S. Edleston:—"Some sixteen years ago, the 'Negro' aberration of this common species was almost unknown. Last year, I obtained the eggs of a female of the common form, which had been crossed with a 'Negro' male; the larvæ I fed on willow, and had this year some remarkably pretty aberrations, the connecting link between the 'Negro' and the usual form, but far before either as regards beauty. I placed some of the virgin females in my garden, in order to attract the males, and was not a little surprised to find that most of the visitors were the 'Negro' aberration; if this goes on for a few years, the original type of *A. betularia* will be extinct in the locality."

In all the districts I have named, besides the tendency to the production of melanic forms, we may also notice the existence of a very meagre Lepidopterous fauna; and, although from our ignorance of the conditions which are of most importance to any animal, it is hazardous to try to point out the special circumstances which prevent its spread or check its fertility, perhaps the following may be suggested as not improbably amongst the causes at work in limiting the numbers of *Lepidoptera* in Scotland, Ireland, the Isle of Man, and the North of England:—The peculiarities of the climate of Ireland, and the Isle of Man being deficient sunshine, excessive moisture, and almost entire absence of frost, it may be suggested that, under such conditions, the hibernation of larvæ and the sleep of pupæ are incomplete, and that damp and mould make many victims. Over wide districts of

Yorkshire, Lancashire, and Durham—those very districts where melanism especially occurs—the air is polluted by mephitic exhalations from furnaces and chemical works, the sun is obscured by clouds of coal smoke, and the vegetation defiled and destroyed by deposits of soot; in some of the worst districts, such as St. Helen's and Bradford, *Lepidoptera* scarcely exist at all. In the Highlands of Scotland, although the air be purer, and the sunshine brighter, the long, cold, wet winter and the late spring can hardly fail to check the multiplication of those forms of life which have their metropolis in warmer southern lands.

Now, Mr. Darwin has shewn us that great constitutional differences both in animals and plants are correlated with differences of colour, and he gives many curious and interesting examples proving that black and dark coloured animals escape many diseases, are less liable to the attacks of parasites, and will stand changes of temperature which prove fatal to the lighter coloured varieties ("Animals and plants under domestication, vol. ii, chap. 21 and 25).

I will further quote a passage from Mr. A. R. Wallace's recent address to the Biological section of the British Association at Glasgow: "Few, if any, wild animals are wholly white, the head, the face, or at least the muzzle or the nose are generally black, and there is reason to believe that dark pigment is essential to good hearing, as it certainly is to perfect vision.

"If the prevalence of white coloration is generally accompanied with some deficiency in the acuteness of the most important senses, this colour becomes doubly dangerous; for it not only renders its possessor more conspicuous to its enemies, but at the same time makes it less ready in detecting the presence of danger.

"Hence also is a reason why Albinoism, although freely occurring in captivity, never maintains itself in a wild state, while *Melanism* does.

"In the xanthochroic races of man, we find a high development of intellect, accompanied by a slight deficiency in the acuteness of the senses, as compared with the darker forms."

As it thus appears certain that greater strength of constitution, and more powerful and acute perceptive faculties are, from some yet unknown cause, associated with dark colours in the *Vertebrata*, may we not presume that insects are subject to the same law, and that dark varieties of *Lepidoptera* are able to spread and increase under adverse conditions, whilst the lighter coloured types fail to do so, and are consequently eliminated in the struggle for life, and that the occurrence of melanic forms may be thus reasonably explained as a simple case of the "survival of the fittest?"

In conclusion, I will mention a few of the species of which melanic varieties occur in the northern and western parts of the British Islands :—*Hepialus humuli* (var. *hethlandica*, H.-S., 784), *Arctia fuliginosa*, *Odonestis potatoria*, *Orocallis elinguaris*, *Biston hirtaria*, *Biston betularia*, *Phigalia pilosaria*, *Thera juniperata*, *Hypsipetes elutata*, *Laurentia cæsiata* (var. *glaciata*, H.-S., 2646), *Melanthia rubiginata*, *Melanippe tristata*, *Melanippe fluctuata*, *Cidaria russata*, *Cidaria suffumata* (var. *piceata*, H.-S., 2635), *Cymatophora duplaris*, *Cymatophora diluta*, *Leucania pudorina*, *Xylophasia poloyodon*, *Agrotis lucerneæ* (var. *latens*, Guen., i, 305), *Noctua xanthographa*, *Triphæna orbona* (var. *Curtisii*), *Orthosia suspecta*, *Cirrhædia xerampelina* (var. *renicolor*, Guen., i, p. 402), *Dianthæcia carpophaga*, *Dianthæcia capsophila* (? melanic var. of *carpophaga*), *Dianthæcia Barrettii* (? melanic var. of *conspersa*), *Dianthæcia cæsia*, *Polia chi* (var. *olivacea*, Guen., ii, 35), *Epunda lutulenta* (var. *lueneburgensis*, Guen., ii, p. 45), *Aplecta occulta*, *Aplecta nebulosa*.

Douglas, Isle of Man : October, 1876.

---

DESCRIPTION OF THE LARVÆ AND HABITS OF *EBULEA*  
*STACHYDALIS* AND *SAMBUCALIS*.

BY WILLIAM BUCKLER.

For my justification in now publishing what follows, I must refer to Vol. xii of this Magazine, pp. 158 & 159, and to p. 93 of the current Vol. ; and I think I can so refer with confidence.

On the 11th of last September, whilst gathering some *Angelica sylvestris*, I accidentally fell into a deep ditch, and whilst there made acquaintance with a large plant of *Stachys sylvatica*, the leaves of which bore unmistakable marks of the work of some sort of larva ; this incited me to pull up the plant, and on examination I found thereon five larvæ of a Pyraloid form. Remembering what I had read of the new *Ebulea*, I formed hopes immediately that I had taken its larva, and further investigation with the help of books and figures, turned my hopes into such certainty as can exist, until the moths have been bred.

Further search in more ditches was rewarded by the capture of several other examples of the larva, and after that I set to work to get *sambucalis* in the same stage for comparison, and I took five and twenty of this species also. And I may say briefly at once, that although at first sight the two larvæ are not unlike, they possess ample and satisfactory points of distinctness ; *sambucalis* is longer in proportion to its stoutness than *stachydalis*, it is not so glass-like in appearance, and it has always on the third segment, and often on the fourth also, a black lateral spot, which is wanting in *stachydalis*. I now proceed to give other points at greater length below.

*E. stachydalis*. The larva lives in a sort of tube, formed either by turning down the tip of a leaf, and folding it closely on to the under surface with a quantity of silk, or else by drawing together a fold of the under surface, and covering it over with a *thick* silken web, in either case leaving an opening at each end; in such a retreat, it seems to live quietly by day, and comes out at night to feed on the remaining portions of the same leaf; so that as it grows it must move from leaf to leaf. I think I found most of the larvæ low down on the plants of *Stachys*, for though I found several webs on the upper leaves, they were generally empty. The larva eats large holes quite through the substance of the leaf, thus giving conspicuous marks of its presence, and leaving the ribs and the margin untouched: when full-fed, it quits the plant in search of a suitable hiding-place, in which to spin its cocoon for passing the winter.

The smallest larva I chanced to meet with, was about  $\frac{3}{8}$  inch long, and possessing all the characters of those more mature. The full grown larva is about  $\frac{5}{8}$  inch in length, with the true *Pyralis* contour, thickest in the middle of the body, the segments well defined and plump, especially on the belly, and on the back sub-divided by a transverse wrinkle, the head small, and projecting forwards in a line with the body, the ventral legs slender, furnished with rather spreading hooked feet, the anal pair extended behind the body. In colour, the head is whitish with the least possible flesh tinge, the mouth brownish, the ocelli blackish, the second segment whitish with a triangular broadish spot behind of bright transparent green; from this starts the conspicuous dorsal stripe of the same colour, more or less dark, of uniform width to near the anal extremity, where it narrows a little by degrees and is seen to be pulsating; on either side of this, is a broad rather ragged edged stripe, quite attenuated anteriorly and a little posteriorly, of *pure opaque white*, bearing a few minute freckles transversely near the front of each segment; the *segmental folds pure white*; below on the side is an uniformly broadish stripe of transparent green, darker in some parts than in others, and along its lower edge the tracheal thread of whitish can be seen beneath the skin, on which are the small round black spiracles; the belly and legs are pale, the former of a semi-pellucid faint greenish tint, yet withal having a most delicate flesh tinge, the latter pellucid; the tubercular warts are raised, their centres green and glittering, each bearing a fine hair; *the whole skin of the larva is lustrous as the clearest glass*.

When full-fed, it by degrees loses all its previous details of

colouring and texture, until it becomes uniformly *like polished white ivory*, and, after remaining a few days in this state, begins to spin its cocoon.

By the 25th of September, all my larvæ had spun themselves up in strong and closely woven silken cocoons, transparent at first, but as soon as they were made thicker, changing to a flesh colour, and in course of a week to pale brownish.

Guenée (viii, p. 364) says of this species, "Elle est bien dis-tincte de la *sambucalis*, quoiqu'en dise Duponchel. Sa chenille vit sur la Pariétaire, et aussi sur le *Stachys sylvestris*, au dire de Germar, "qui la décrit ainsi : *Larva obesa, rugosa, glabra, sub-pellucida, alba, habitat in foliis Stachys sylvestris contortis*:" but it seems to me this description by Germar does not suit the larva until it is about to spin.

*E. sambucalis*. When setting myself to look for this species, I first tried the tall bushes, with stiff leaves, but meeting with no success on them, I then tried some young growth of *Sambucus nigra* a foot or two high, and soon found several larvæ, each of them lying under a whitish silken web spun on the under surface of a leaf, and causing a narrow fold, which though slight was perceptible even on the upper surface; when the leaf was turned up, the larva was seen lying in the hollow, covered with this semi-transparent screen of silk, open at each end, and from this at night it would emerge to feed on other parts of the leaf. The smallest example I found was from three-eighths to half-an-inch long, and very slender, of a pale watery greenish tint, having a deeper green dorsal stripe, bordered on each side with a stripe of faint semi-opaque whitish-grey, all the rest of the body rather translucent.

The full grown larva is  $\frac{3}{4}$  to  $\frac{7}{8}$  inch in length, of slender proportions, fusiform, the head in line with the body, the segments sub-divided by a wrinkle on the back of each, while on the belly they are plump and well divided; all the legs slender, the anal pair extended behind the body. In colour, the head is of a pale semi-pellucid watery greenish tint, having a faint tinge of flesh colour, the second segment similar, but with a broad dorsal triangular mark behind, of a bright and full semi-transparent green, from which the dorsal pulsating stripe of the same colour proceeds; on either side of this, is a wider stripe, though much attenuated in front and a little behind, of *semi-opaque whitish-green*, having a few small green freckles transversely near the front of each segment; the *segmental folds yellowish*; below, is an equally wide stripe of the full semi-transparent green, somewhat softened above



and also below where the small round black spiracles occur; the belly and legs are of the same semi-pellucid pale watery greenish tint as the head; the tubercular warts have a small green central eminence emitting a fine hair: *on the front of the third and fourth segments on either side is a velvety black spot*; a few individuals occur, in which these spots are almost obsolete or absent on the fourth segment: the skin on the head and on the plate of the second segment is like shining glass, but on all the rest of the body it is like *ground glass*.

When full-fed, the details of colouring fade gradually away, and the larva changes to a *pale pink hue*, and then spins itself up in a cocoon of whitish silk, which soon turns rather brown.

Emsworth: October 7th, 1876.

---

*A new habitat of Velleius dilatatus.*—In the "Petites Nouvelles Entomologiques" of August 15th, is the following note by M. Viturat, which may be of service to English Coleopterists.

"During nearly ten years that I have given attention to *Coleoptera*, I have, on every practicable occasion, sought, but in vain, in the nests of wasps and hornets for *Velleius dilatatus*, which all entomological works state lives exclusively with these *Hymenoptera*; but, on the 27th July, I found a whole family of this species in the trunk of a tree. This was an oak, with a hollow of about two décimètres diameter, situate half a mètre above the ground, which appeared to have been the abode of squirrels or rats during the winter, and was filled with the excrement of these animals, and fine black earth arising from the decomposition of the wood. The tree did not appear to have been inhabited by hornets, at least, for a long time, judging by the aspect of its interior; when I examined it, I first saw a *Velleius*, which I thought was *Staphylinus olens*, and which ran out of sight; I then took out a handful of the matter which was in the tree, without paying any particular attention to its contents, when I found that I was bitten, until blood came, by a *Velleius dilatatus*, which, notwithstanding its small mandibles, grips harder than the above-named *Staphylinus*. Having been thus brought to notice the cause of my wound, I carefully collected for examination, with all the avidity of an ardent naturalist, all the *débris* which remained in the interior of the trunk, and my labour was fully recompensed by the capture of five other examples of *Velleius*; hence I conclude that these insects do not live exclusively with *Hymenoptera*, and that the search for them in places like that I have mentioned might help to diminish their rarity."

I may add, that at least two examples of *Velleius dilatatus* were taken in this country by the late Charles Turner, in the burrows of *Cossus ligniperda* in a tree (E. M. M., iii, 96), and the connection of the beetle with *Cossus*-trees has of course long been known to French collectors.—J. W. DOUGLAS, Lee: September 11th, 1876.

[I once took more than a dozen of the allied *Quedius truncicola* at Mickleham, in a rotten tree, as above described. On habits and economy of *Velleius*, see A. Rouget, Mém. Ac. Dijon, 3me. série, i, pp. 201-229.—E. C. R.]

*Note on Lyctus brunneus found in London.*—In the year 1862, on a small log of wood with the bark on, imported into the London Docks from Swan River as a sample, I found five beetles, of a species which has recently been identified as *Lyctus brunneus* by Dr. Sharp, who informs me that he has specimens of it from New Zealand, France, and Britain, and that it is recorded from Woodlark Island.—ID. : 10th October, 1876.

*Note on Corixa vernicosa, Wallengr., and C. Douglassi (Fieb.).*—A renewed investigation of a typical example of *Corixa vernicosa*, kindly sent to me by Pastor Wallengren, of Farhult, Sweden, and comparison therewith of specimens of *C. Douglassi*, including several recently taken by Dr. Reuter in Scotland, have convinced me that both names refer to one species. The majority of the British individuals differ from the Scandinavian type before me in having the yellow lines on the corium somewhat closer together, and the posterior lines shorter, thereby leaving the characteristic black space at the inner angle larger. The synonymy will therefore be :

*Corixa vernicosa*, Walleng., Öfv. K. Vet. Ak. Förh., 145, 7 (1854) ; J. Sahlb., Not. Fenn., xiv, 285, 8 (1875).

*Corixa Douglassi* (Fieb.), Doug. & Scott, Brit. Hem., i, 612, 18 (1865).

—ID. : 11th October, 1876.

*Notes on some additional species of Psyllida new to Britain.*—It is interesting to find that this group still furnishes fresh representatives in different genera, and as no doubt many others will be added, I at present merely give a list of the additions.

*Psylla cratagi*, Scop., not common on hawthorn in August. *P. costalis*, Flor., on hawthorn in August, in company with *P. mali*, from which it may be separated by the green costal nerve and shorter elytra. *P. stenolabis*, Fr. Löw, a single ♂ beaten from an oak tree in this neighbourhood, was kindly named for me by the author, to whom I had sent it for identification. It is described by him in the "Petites Nouvelles Entomologiques," for September 1st, 1876. *P. pyricola*, Först., taken by Mr. Douglas on pear trees in Scotland, not uncommon in August ; I have previously considered this species to be only a variety of *P. pyri*, L., not having before seen examples, and believing that the short diagnosis of Förster referred to it. The elytra are shorter and yellower than in the last named, and without the black marks between the nerves. *P. pyrisuga*, Först. ?, and *P. peregrina*, Först. ? : I have as yet only females of these two, which Dr. Fr. Löw agrees with me in believing may prove to be the species to which they are referred.

I have also two other undetermined species of *Psylla* which are evidently new, one of them allied to *P. flavopunctata*, Flor.

*Trioxa abdominalis*, Flor. I have seen what I believe to be a ♂ & ♀ of this species, taken by Dr. F. Buchanan White in Scotland on pines ; it is about the size of *T. galii* ; ♂ black, with short yellowish elytra blunt at the apex, and with a green abdomen ; ♀ orange-red, with paler longitudinal streaks on the mesonotum, abdomen coloured as in the other sex : Flor appears to have seen only three males, the female being unknown to him. *T. abieticola*, Först. : this may be considered as good as a new species, as Förster had only seen a single ♀, sent to him by Mr. Walker when he made his description ; I have, however, met with it in great abundance on Purley

Downs in August last, both on the spindle tree (*Euonymus europæus*) and the buckthorn (*Rhamnus catharticus*): Dr. F. Löw considers this species to be the *P. rhamni*, Schrank, and so describes it.—JOHN SCOTT, 1, St. Mildred's Terrace, Bromley Road, Lee, S.E.: 9th October, 1876.

*Strange habit of an Orthopterous insect.*—I yesterday saw a large grasshopper or locust, busily engaged feeding on some horse-dung in my drive. It was 3 inches long, of a dark yellow bronze colour, greenish at the head. I watched it for some minutes, before attempting to catch it, in which I failed, as it flew away into the grass. I came back in an hour's time, and there it was again, busily employed on the manure for the second time. Again it escaped me, though I once got my hat over it on the grass. Its flight against the wind was only a few yards; but with the wind it flew some forty yards after I missed it. I have never seen one of this size in this country, and cannot understand its being twice on the same spot, if it were not a manure-feeder.—C. F. THRUSTON, Talgarth Hall, Machynlleth: 18th September, 1876.

[The description points to *Pachytylus migratorius* or *cinerascens*, or *Acrydium peregrinum*, all feeders on growing vegetable matter. A very slightly digested meal of fresh grass may possibly have induced the insect to act in opposition to the known habits of its group.—EDS.]

*Pieris Daplidice at Folkestone.*—On the 21st August, I took a female *Pieris Daplidice*, unfortunately much worn, on the Downs near Folkestone. The insect, once seen on the wing, cannot afterwards be easily passed by as one of the common species of *Pieris*; its flight is a slow steady one, and it continually settles on flowers; it is not so strong on the wing as *A. cardamines*, but more so than *L. sinapis*.—THOS. H. BRIGGS, Lincoln's Inn: 2nd October, 1876.

*Note on the larva of Lycæna Argiolus.*—I think it may be interesting to mention that during last month (August, 1876) Mr. Hellins obtained a number of eggs, and sent a portion of them to me, and that all the larvæ, on hatching, were found to be exactly like those of the spring brood, in being furnished with hairs, and in moving slowly. Unfortunately, the ichneumon which I bred in the spring got damaged before Mr. Marshall saw it; so, although he can refer it to the genus *Limneria*, he is not able to identify the species.—WM. BUCKLER, Emsworth: Sept. 22nd, 1876.

*Acherontia Atropos and Sphinx convolvuli at Exeter.*—I have taken *A. Atropos* and *S. convolvuli* in the prison grounds here. *Colias Edusa* has been common in some places.—J. HELLINS, Chaplain's House, County Jail, Exeter: 27th Sept., 1876.

*Occurrence of Charocampa nerii at Hemel Hempstead.* I have just seen a specimen of *C. nerii* (the Oleander Hawk), taken by a gardener on the 15th of October, in a garden near here, in the Alma Road. It is now in the possession of — Pitts, Esq., House Surgeon at the Infirmary of Hemel Hempstead. B. PIFFARD, Hill House, Hemel Hempstead, Herts: October, 1876.

*Capture of Deiopeia pulchella.*—This morning I had the good fortune to capture a very perfect specimen of the "Crimson-speckled Footman" here. I found it among some grass near the Martello Tower.—N. FENWICK HELL, West Hill, Aldeburgh: 14th October, 1876.

*Deiopeia pulchella* at Bournemouth.—A week ago, my brother knocked down a moth at Bournemouth, which he brought home to me with a damaged hind-wing. It turns out to be *Deiopeia pulchella*.—E. L. WALSH, Pembroke House, Clifton, Bristol: 16th October, 1876.

*Captures of rare Noctua in the Isle of Wight*.—During a recent stay of a little more than a fortnight in the Isle of Wight, we took a few fine specimens of *Leucania albipuncta*, besides three *Triphana subsequa*; and, amongst other *Noctua*, *Helio-phobus hispidus*, *Aporophila australis*, *Luperina cæspitis*, and *Agrotis saucia* and *obelisca*.

Mr. H. Rogers, of Freshwater, gave us a "private view" of a fine specimen of *Noctua flammata*, then only half dried upon the setting board, which he had recently captured, also of a specimen of *Hadena peregrina*, and of two specimens of *Laphygma exigua*, all three of which were also taken by him this season.

The number of moths which came to sugar during the period of our stay was very small, and the attendance rather select than numerous.—J. B. BLACKBURN, Bron Seiriol, Bexley Heath; C. J. BUCKMASTER, Southfields, Wandsworth, S.W.: 20th September, 1876.

*List of Lepidoptera captured at Rannoch in July, 1876*.—On the 10th of July last, Mr. Nelson M. Richardson and I started for three weeks' collecting in this famous locality. Our trip having been successful, it occurred to me that a detailed account of our captures might not be without interest to those who, like myself, had no previous knowledge of that neighbourhood. Thanks to the kindness of my friends, Mrs. Hutchinson, Mr. C. G. Barrett, and Dr. Gill, we were not unfurnished with information, but I fear that this advantage was more than counter-balanced by want of experience in the work; my own attention having, for the last four or five years, been devoted almost entirely to the Cambridgeshire and Norfolk fens, even wood, not to say mountain, collecting is quite strange to me. Consequently the following list is hardly a fair representation of what might be expected by more experienced collectors; in the 'Micros' especially, our ignorance of many of the best species has made our catch meagre in comparison to what it might have been. It is only fair, however, to state that we did not spare for work; throughout our stay, every night one of us worked the highest accessible mountain peaks, while the other collected over the lower slopes or in the Black Wood. This high mountain work is very severe; the climb, which when unencumbered is a pleasure, becomes toilsome in the extreme, when burdened with a weight of apparatus and the clothing which is absolutely necessary. As soon as darkness comes on, the cold grows so intense, that, in spite of the warmest wraps, it taxes one's endurance to the utmost to last out till the morning permits a descent. During all our stay, Mr. Richardson had only one night, and I not even one, when there was not a gale of wind blowing at this elevation: often we were enveloped in clouds, when not an insect was to be seen; and once I lost myself in a dense sea of mist, and wandered about all night, not knowing where I was, till I caught a distant glimpse of the loch in the morning light, while the clouds lifted for a moment or two. As a rule, we passed the night thus, seeing perhaps one insect, or not even that, but everything we did get was rare; the only exception being a worn out *H. adusta*, which had somehow found its way to an elevation of 2500 ft. Of course, this work rendered it impossible to do much day collecting, especially as part of our time was occupied in reading mathematics; hence our take of butterflies was very small. The list is as follows:—

*Argynnis Euphrosyne*, not uncommon. — *Erebia Cassiope*, locally common on the hills; *Blandina*, at Pitlochrie, just coming out. — *Chortobius Davus*, more general than *Cassiope*; *Pamphilus*, common along roads. — *Lycana Alexis*, common along roads.

*Hepialus hectus*; *velloda*, not common.

*Metrocampe margaritaria*, swarming. — *Ellopie fasciaria*. — *Boarmia repandata*: no vars. occurred. — *Dasydia obfuscata*, comes to light. — *Acidalia fumata*. — *Fidonia atomaria*; *pinaria*; *pinetaria*, the ♀ flies very little. — *Larentia didymata*, the dark form; *caesiata*, abundant at all levels; *salicata*, two only, both over 2000 ft. up; *pectinitaria*, a pest on the hill sides; *olivata*, Pitlochrie. — *Emmelesia affinitata*; *albulata*; *taniata*, Pitlochrie; *ericetata*, on the hill sides; *blandiata*. — *Eupithecia satyrata*, var. *callunaria*; *castigata*; *trispinata*? and *vigaureata*? these specimens being much worn, their nomenclature is not so certain as might be desired; *nanata*. — *Thera firmata*. — *Hysipetes elutata*, one only! — *Melanthia ocellata*, a pest on the hills. — *Melanippe tristata*; *subtristata*; *montanata*, a pest high up the mountains. — *Coremia munitata*. — *Phibalapteryx lignata*, meadows at Kinloch. — *Cidaris corylata*, a beautiful var., milk-white with dark border; *russata*, several dark vars. but none very striking; *populata*, abundant, a few nearly black. — *Eubolia palumbaria*; *lineolata*. — *Anaitis plagiata*, high up on the hills.

*Notodonta camelina*, very dark.

*Cymatophora duplaris*, dark, but not much more so than the Norfolk *fen* type. — *Acronycta menyanthidis* and *myrica*, just over. — *Leucania impura*, the ordinary type. — *Xylophasia rurea*; *lithoxylea*; *polyodon*, abundant, dark specimens not uncommon, but very few black. — *Charaas graminis*. — *Miana arcuosa*. — *Celena Haworthi*. — *Caradrina cubicularis*. — *Busina tenebrosa*, very dark. — *Agrotis porphyrea*. — *Tryphana orbona* and *pronuba*, not common! — *Noctua augur*, slightly dark, but less so than the *fen* type; *plecta*, slightly dark; *brunnea*; *festiva*, very abundant toward the end of July (out of a large number brought home, a fair sprinkling occurs of the so-called species, *conflua*, with every conceivable intermediate form: they all run a little smaller than southern specimens); *baja*; *sobrina*, we found this species generally from 700 to 900 ft. elevation, but not higher; and, as far as we could judge from the two or three nights of our stay during which it was out, it came pretty freely to sugar; both these facts seem contrary to the alleged experience of former collectors; *neglecta*, a single specimen at the end of our time, a very curious form, red, but much larger and paler than the red specimens in my cabinet, and with a pale blotch at the base of the front wings; *xanthographa*, just appearing. — *Pachnobia alpina*, this insect occurs sparingly over the tops of the highest hills: we obtained one or two at rest on the rocks by day, and others by netting at night. Sugar we only tried once, and found it totally unprofitable, though probably a longer trial might have altered the case. It is very wild and strong on the wing, and from this fact, joined to the almost constant wind-storms, soon becomes worn and damaged, so that only two or three of those we took are really perfect. I believe the number taken in Scotland to have been very far below Mr. Birchall's estimate, but there can be no doubt that (in common with almost all our rarities) it only wanted working for. When a species can be referred to a definite locality, those who carefully and persistently work that locality, with

due attention to the probable habits of the insect sought, *must*, sooner or later, turn it up. In the present instance, however, the work is unusually severe. I can give no clue to the food-plant: the insects occurred on the most barren peaks, the only constant herbage being heath and a woolly kind of moss, in which we found two pupa cases, from one of which the moth had just emerged, and was sitting close by. — *Euplexia lucipara*. — *Aplecta occulta*, not rare, one specimen almost as light as two southern types in my cabinet, taken near Ipswich; *nebulosa*; *tincta*. — *Hadena adusta*, common, but worn out; *piri*; *contigua* and *rectilinea*, apparently all but over. — *Plusia v-aureum*. — *Mania typica*. — *Stilbia anomala*, one fine var., smoky-black without markings. — *Phytometra cænea*.

*Scopula alpinalis*, sparingly distributed over all the hills; *lutealis*, Struan. — *Pionea forficalis*. — *Eudorea scotica*, a single specimen; *muralis*; *atomalis* = *dispunctella*, not uncommon on heath. — *Crambus pratellus*; *ericellus*; *margari-tellus*; *tristellus*, *inquinatellus* and *culmellus*, fully as plentiful as in the south. *Phycis carbonariella*, out of burnt heath.

*Tortrix ribeana*; *viburnana*; *Forsterana*, small Scotch form. — *Amphysa Gerningana*. — *Penthina pralongana*; *ochromelana* = *dimidiana*. — *Pardia tripunctana*. — *Sericoris conchana*, common at Kinloch; *lacunana*; *urticana*, white Scotch form; *Daleana*, not uncommon in the Black Wood; *irriguana*, high up. — *Mixodia Schulziana*, not uncommon on the hill tops; *palustrana*; *rubiginosana* = *Bouchardana*. — *Sciaphila sinuana*, on a mountain side; *subjectana*, var. *incertana*; *virgaureana*. — *Bactra lanceolana*, abundant in the bogs, rather smaller than southern specimens. — *Grapholitha campoliliana*; *Penkleriana*. — *Coccys ustomaculana*. — *Dicrorampha herbosana*. — *Catoptria cana*. — *Eupæcilia angustana*. — *Argyrolepis cnicana*. — *Aphelia pratana* = *osseana*.

*Tinea cloacella*; *semifulvella*. — *Micropteryx aruncella*. — *Hypolepis costella*. — *Depressaria pulcherrimella*. — *Gelechia diffinis*; *terrella*; *galbanella*; *notatella*. — *Endrosis fenestrella*. — *Glyphipteryx thrasonella*, common among rushes. — *Argyresthia nitidella*; *retinella*; *sorbiella*; *pygmaella*; *Gædartaella*, and do., var. *literella*; *Brockeella*. — *Cedestis farinatella*. — *Coleophora nigricella*. — *Lithocolletis spinicolella*.

*Pterophorus Loewii*.

Besides the above, five specimens occurred of a *Gelechia* which I am as yet unable to identify.

My thanks are due to Mr. C. G. Barrett for his kindness in naming a large number of the above insects, with which I was not at all, or only partially, acquainted. — F. D. WHEELER, Norwich: September 15th, 1876.

P.S.—Under the head *Pachnobia alpina*, I omitted to mention that this is a most variable, as well as beautiful, insect. In our specimens, the ground colour varies from bright rosy, or, in one instance, delicate pink, to a deep steely-blue. The markings also differ much in extent and intensity.

*Occurrence of Epunda lutulenta, var. lueneburgensis, in Scotland.*—On the 17th September, I received from near Loch Laggan, Co. Inverness, three specimens (two ♂ and one ♀) of a moth I thought I never saw before, which had been taken at sugar on the night of the 15th September; so I sent a neighbour of mine, Mr. W. Greaseley, of Wallasey, a very observant entomologist, to work it up. He succeeded

in taking four more of the moths, obtained eggs from two females; noticed a plant very much eaten in the locality where the moths were taken, and a deal of frass, like that of *Noctua* larvæ, underneath the plants; consequently he brought the seeds to try to grow the plant for the larvæ to feed on in spring.

The plant is red rattle, *Pedicularis palustris*. The moth was so local, that although two men were sugaring for it, none were taken except in one spot of about a quarter of a mile in extent. Different plans in the neighbourhood were tried, higher up the mountain and on both sides of the favoured spot, also the wood by the lake side, but not a single moth could be found except where the first specimens were obtained.

The eggs were laid on or about the 2nd of September, and hatched on the 2nd or 3rd of October. I sent a few to three of my friends, none of whom seemed to recognise the eggs as those of *lutulenta*, though two of them had bred *lutulenta* from the egg.

The Rev. J. Hellins thus describes it:—"Somewhat depressed, globular, opaque, with small button on top, surrounded by *irregular* flutings (or shallow ribs) with transverse reticulation, about 35 flutings or ribs, shell glistening, colour now pale dull yellowish, irregularly blotched to a great extent with purplish-brown, a small egg for size of moth." I may here remark that the moths are much smaller than the *lutulenta* we take here, and Mr. Greaseley says the eggs were pale yellow when first laid. Before hatching, they changed to deep lead colour, and just before they hatched became lighter, pale blue-grey. The young larvæ are green with a few hairs or spines and dark heads. I suppose all young larvæ are very much alike, they feed well on grass and knot grass.

Mr. R. McLachlan kindly examined the anal appendages of a male I sent him for the purpose of comparison with the type form of *lutulenta*, and found no apparent specific difference, which exactly corresponds with my own observation.

Mr. N. Greening, of Warrington, came here to see the series which I sent for Mr. Bond to exhibit at the Meeting of the Entomological Society in London, on the 4th inst., and he said Mr. James Cooper brought the same variety from Loch Rannoch about twenty-five years ago for us,—a fact which I had entirely forgotten, but which accounts for a specimen I found in my brother Benjamin's cabinet at Bowdon.

It is such an interesting variety, and itself varies from light grey to nearly black, that if any of us succeed in rearing the larvæ, very likely more will be written about it for the information of your readers.—NICHOLAS COOKE, Gorsey Hey, Liscard: 12th October, 1876.

*Notes on Cidaria reticulata*.—This pretty species was taken by the late T. H. Allis and myself when on a tour in the Lake District in 1856. In the first week in August, for several years, we visited the same spot without success. Mr. Allis told a collector, who now and again went to the woods, that he had left pieces of paper stuck on thorns for my guidance, and when he called on the man found he had taken five examples. The collector has been many times since to the same locality to no purpose. Some seven years afterwards, Mr. Gregson took a specimen when I was with him, and the next year another. On this latter journey he found the supposed food plant, *Impatiens noli-me-tangere*. He sent word to the Rev. J. Hellins that he

had found a small bed of the plant, and that gentleman informed me that he knew the history of the insect, and that it had been bred by Carl Plötz from a green larva feeding on that plant. Mr. Gregson described the locality to me, but added that he had been there several times, and could not re-find the plant. I determined to try different districts from Ambleside on both sides of the lake, but the result appeared hopeless, until one day towards the end of August I found a few plants, when trying to extricate myself from a thicket in a very wet place; others were found by tracing the sound of rushing water. As I did not wish to destroy so tender a plant, I picked a few outside tall specimens to see if there were any eggs. After bringing home some sprigs, I set to work with my glass, and found a few eggs; the first larva that hatched I sent to Mr. Buckler, and a second after first moult: he will no doubt give an ample description. The larva feeds by night only, on the seeds; occasionally, from hunger, it will nibble the leaves. I fancy some larvæ may hibernate. I saved every bit of the plant, and to-day have found a pupa and dead larva.—J. B. HODGKINSON, Preston: 9th October, 1876.

*Notes on Dianthæcia casia and other Lepidoptera in the Isle of Man.*—*Dianthæcia casia* has been abundant in the Isle of Man during the present summer. Owing to an accident, I was unable to climb to the dangerous positions on the cliffs which it has been common to select for the capture of this insect, during its short twilight visit to the flowers of *Silene maritima*, and perforce had to be content with what a few plants nearer home and on the level might produce. I was fortunate enough to find a little recess, about ten feet across, amongst the rocks on the shore, of easy access, and where the *Silene* grew freely; this I visited on twenty evenings during June and July, and without moving from the spot, indeed, sitting on a stone the most of the time, I captured the following moths, flying over the solitary patch of flowers:—105 *Dianthæcia casia*, 32 *D. capsophila*, 4 *Plusia v-aureum*, 16 *P. gamma*, 6 *Cucullia umbratica*, 2 *Hadena adusta*, 10 *Xylophasia polyodon* (including several melanic varieties), 4 *Hepialus celtæda*, and 8 *Setina irrorella* ♂ (the two last named captured as they passed, not I think attracted by the flowers), and 12 *Eupithecia venosata*. *Basilinea*, *brassicae*, *exclamationis*, and *cubicularis* also came in some numbers, but *casia* was by far the most abundant species; nearly all the moths named visited the flowers between 9.15 and 9.45 p.m. There were very few other flowers within 100 yards, and probably most of the moths in the neighbourhood were concentrated on this isolated patch.

*Casia* remains on the wing for at least three months; I captured the first, a worn ♀, June 2nd, the last, a ♂ in fine condition, August 25th. This unusually long flight is probably explained by the circumstance that this species sometimes remains in the pupa-state two, three, and even four years (see Guenée, *Noctuérites*, vol. ii, p. 18), and we might expect that moths which are the produce of the larvæ of various years would emerge from pupa at slightly different dates.—E. BIRCHALL, 77, Derby Square, Douglas: October 1st, 1876.

*Occurrence of Tinea angustipennis, Herrich-Schäffer, in England.*—Of this very striking species (of which probably not ten specimens are known), a specimen was sent to me by Mr. Sorrell for determination last April. It was taken in 1874 in a weedy field opposite Acton Green. I was in hopes that Mr. Sorrell would himself have communicated a notice of this interesting capture.



When at Frankfort-on-the-Main in July, 1868, I saw, in Herr Mühlig's collection, a specimen of *Tinea angustipennis*, which had been bred from rotten wood.

Breslau, Munich, and Frankfort were the only localities known to me, till I learnt that it had occurred near London.—H. T. STAINTON, Mountsfield, Lewisham: October 12th, 1876.

*Occurrence of Gelechia (Doryphora) morosa, Mühlig, in England.*—This insect has been bred by Mr. Jenkinson from a larva found at Wicken Fen on June 18th, in the shoots of *Lysimachia*. The perfect insect made its appearance on July 8th. Its similarity to *G. farinosa* (which will no doubt be some day detected in localities in the north of England, where *Primula farinosa* is plentiful) is so great, that any one who has seen the one species can imagine the other, the ochreous tibiae of the posterior legs in *G. morosa* affording the only striking difference; in *G. farinosa* these tibiae are dark grey.

In September, 1869, I received from Wicken Fen young larvæ in *Lysimachia* shoots, which I thought might be referable to this species, but with me they did not survive the winter.—ID.

ENTOMOLOGICAL SOCIETY OF LONDON: October 4th, 1876.—Sir S. S. SAUNDERS, C.M.G., Vice-President, in the Chair.

Mons. A. P. De Borre, of Brussels, Secretary of the Belgian Entomological Society, was elected a Foreign Member.

Mr. Bond exhibited, on behalf of Mr. N. Cooke, several interesting British *Lepidoptera*, viz.: three examples of *Crymodes exilis* from Loch Laggan, a long series of a form of *Epunda lutulenta*, apparently pertaining to the var. *luneburgensis*, Freyer, and *Sericoris irriguana*, from the same locality. Also an unusually pale ♀ of *Hepialis humili*.

Mr. Higgins sent a letter respecting the exhibition of specimens of *Deilephila euphorbia*, said to have been taken near Harwich. [*Vide* report of the Meeting for Nov. 17th, 1873 (E. M. M., vol. x, p. 183), when *Sphinx pinastri* was recorded from the same locality]. He and Mr. Janson had recently visited the locality, where they were joined by the supposed finder. They were able to assert that the food-plant grew at the place indicated.

Mr. S. Stevens had received information that led him to believe that an example (exhibited) of *Callimorpha Hera* had recently been taken at St. Margaret's Bay, near Dover.

Mr. W. Cole exhibited a fine series of *Ennomos angularia*, bred from eggs laid by the same female; the larvæ having been fed upon four different food-plants. The result was negative so far as phytophagic variability was concerned. But all differed in wanting much of the yellowish tint observable in captured specimens, of which a series was placed by the side of those bred, for comparison. Mr. McLachlan said that this result was quite in accordance with an opinion expressed by him many years ago, to the effect that food has little influence in causing variation in *Lepidoptera*.

Mr. Forbes exhibited a *Curculio*, found living at Highgate, amongst exotic Orchids. Mr. Pascoe stated that it was apparently an *Alcides*.

Mr. Enock exhibited a mounted slide of *Polynema oculorum*, one of the *Proctotrypidae*, prepared in his usual careful manner.

Mr. Smith communicated a paper on new species of *Cryptocerida*, belonging to the genera *Cryptocerus*, *Meranoplus*, and *Cataulacus*.

A further instalment of the proposed Catalogue of British Insects—*Hemiptera* (*Heteroptera* and *Homoptera*, groups *Cicadaria* and *Phytophthires*), by J. W. Douglas and John Scott, was on the table.

## ON MELANOCHROISM AND LEUCOCHROISM.

BY F. BUCHANAN WHITE, M.D., F.L.S.

Climatic variation is a subject that has always possessed great attractions for me; it was, therefore, with much interest that I read my friend Mr. Birchall's notes "On Melanism," at p. 130.

Mr. Birchall begins by stating "that specimens of many *Lepidoptera*, from the Highlands of Scotland, vary widely from English examples of the same species, and that the variation is usually towards a darker coloration; that there is, in short, a tendency to the production of melanic varieties, and that in some cases a dark variety has completely supplanted the lighter coloured type."

That there is frequently a difference between *South* English and Highland examples of the same species will be admitted I think by every one; and that this variation is, in the majority of cases, in the direction of melanism, has been generally taken for granted. That it really is so, the following brief analysis of the Highland *Lepidoptera* will show. In it I have compared the majority of the *Macro-Lepidoptera* of Scotland north of the Tay with South English (and in a few cases with South European) specimens of the same species; for it must be remembered that North or North-West English specimens frequently exhibit the same, or even a greater, tendency to melanism, than the Highland specimens.

Before beginning the analysis it may be as well to define what is meant by "melanism."

Strictly speaking the term "melanism" ought to be restricted to such forms as *Amphidasis betularia* ab. *Doubledayaria*, Mill., which are more or less infuscated with black; but, as in that variety, the melanism is due to the excessive increase of the markings at the expense of the ground colour, therefore all cases wherein there is a tendency to a suffusion with darker colour, or where the markings and ground colour are alike deepened, must be considered as melanic, as well as those cases where the melanism is produced by suffusion with black. To take an extreme case, a change from a white to an ochreous ground colour, must be regarded as melanism. "Melanism" is not I think a good term for all these various cases, and I would suggest the use of the term "melanochroism" as preferable. On the other hand, "leucochroism" is the very opposite to "melanochroism." By leucochroism I do not mean "albinoism," which ought to be regarded as a more or less diseased or abnormal condition. Any change to a paler colour (as from ochreous to white), or where

markings usually dark are assimilated to the ground colour, or where a pale ground colour is increased at the expense of dark markings (*e. g.* when the red in the hind-wing of *Arctia caja* gains ground at the expense of the black spots) is leucochroism.

In determining whether a species has a tendency in either direction, a certain allowance (how much, experience alone will show) must be made for individual idiosyncrasy in coloration.

I will proceed with my analysis.

Of the 430 (or thereabouts) *Macro-Lepidoptera* inhabiting Scotland north of the Tay, the majority may be at once put aside as not exhibiting sufficient variation for our purpose. Be it observed, however, that when there is a tendency to variation, it is in the majority of cases in the direction of a heightened (darker or more brilliant), and not of a diminished, coloration.

Another group, consisting of species more or less variable in every locality, may also be dismissed with the same observation. In it are included *Tæniocampa*, several species; *Larentia cæsiata*; *Orocallis elingvaria*; *Hypsipetes*, several species; *Oporabia dilutata*; *Cidaria russata* and *immanata*, &c.

The remaining species may then be divided as follows:—

## I. MELANOCHROIC.

1. Species of which all the specimens, or a large majority, are melanochroic—in short, melanochroic races.—*Arctia menthastri* (var. *ochracea*); *A. fuliginosa* (var. *borealis*, Stdg.); *Trichiura crategi* (approaching var. *ariæ*, Hb.); *Orgyia fascelina* (approaching var. *obscura*, Zett.); *Scodiona belgiaria* (var. *favillacearia*, Hb.); *Thera juniperata* (var. *scotica*); *Melanippe fluctuata*; *Notodonta dromedarius*; *Cymatophora duplaris*; *Gortyna flavago*; *Apamea fibrosa*; *Aplecta occulta* (*Note.* The very north European form is pale).

2. Species frequently melanochroic, but of which many individuals are not so.—*Hepialus humuli* (ab. *hethlandica*, Stdg.); *Odontopera bidentata*; *Phigalia pilosaria*; *Aspilates strigillaria*; *Thera variata* (ab. *obliterata*); *Melanthia rubiginata* (ab. *plumbata*, Curtis); *Cidaria suffumata* (ab. *piceata*, Stph.); *O. populata* (ab. *musauaria*, Frey.); *Oreemia ferrugata*; *Bryophila perla*; *Xylophasia polyodon*; *X. rurea* (ab. *alopocurus*, Esp. and ab. *combusta*, Dup.); *Agrotis tritici*; *Triphæna orbona* (ab. *Curtisii*, Newman); *Noctua xanthographa*; *Tæniocampa gracilis*; *Orthosia suspecta*; *Epunda viminalis* (ab. *obscura*, Stdg.); *Hadena adusta*; *H. protea*;

*H. pisi* (?); *Larentia didymata*; *Agrotis nigricans*\*; *Noctua C-nigrum*. (The last three species ought perhaps to be included in division 1).

Besides the above, melanochoic forms of several other species occur, but rarely, *e. g.* the green aberration of *Trachea piniperda*.

## II. LEUCOCHROISM.

1. Species of which all, or a majority, of the individuals are paler than in the South.—*Lycæna Agestis* (var. *Artaxerxes*, F.); *Fidonia pinaria* (the type; the yellow southern form is the var. *flavescens*); *Platypteryx falcata* (var. *pallida*); *Tæniocampa cruda*.

Reference may also be made to—*Pararge Aegeria* (in comparison with the brighter-coloured South European form); and *Cænonympha Pamphilus* (in comparison with the form *Lyllus*).

2. Species frequently paler but not invariably so.—*Cænonympha Tiphon*; *Chelonia plantaginis* (ab. *hospita*, Schiff.); *Oidaria corylata* (ab. *albocrenata*, Curtis); *Eupithecia satyrata* (ab. *callunaria*, Stn.); *Noctua festiva*; *Tæniocampa gothica* (ab. *gothicina*, H.-S.); *Xanthia cerago* (ab. *flavescens*, Esp.); *Lithosia mesomella*; *Venilia maculata*; *Cleora lichenaria* (?); *Leucania lithargyria* (?). (The last four species perhaps belong to division 1).

It will be observed that many of the forms included in both classes are not confined to the Highlands, but are found in Lowland Scotland, and elsewhere.

Of the melanic varieties mentioned by Mr. Birchall some, as *Cymatophora diluta*, *Leucania pudorina*, &c., do not occur in the Highlands, and therefore do not come within the range of my remarks; others, as *Cirrhædia xerampelina*, *Polia chi*, and *Aplecta nebulosa*, do not show melanochoism there: some, as *Crocallis elinguaris*, *Hypsipetes elutata*, *Larentia cæsiata*, &c., might equally (or nearly so) be cited as samples of leucochoism. *Epunda lutulenta* (var. *luneburgensis*) I rather consider as illustrating leucochoism than melanochoism. *Hepialus humuli* ab. *hethlandica* is a local insular form, and not even I believe the predominating form in Zetland.

We now come to the consideration of the cause of the prevalence of melanochoism in the Highlands.

In suggesting "natural selection" as the cause, I believe that Mr. Birchall has solved a great part of the difficulty; not entirely perhaps, for, considering all the facts, I still think there must be some exciting cause (probably meteorological) for the first production of

\* The Southern form is the ab. or var. *rubicans*, Esp.: the dark form is the type.—F.B.W.

the melanochroism. Melanochroism once set up and advantages found to accrue from the possession of it, then natural selection comes into play, and eventually, perhaps, melanochroic races are established. In other cases, where only a proportion of the individuals of a species are melanochroic, the special conditions which made melanochroism an advantage to its possessor, may have ceased to exist, and consequently circumstances permit of a reversion to ancestral forms; or the melanochroic may be the ancestral form, and the dark individuals are reverting. In like manner leucochroism may be an advantage to its possessor, and have been similarly developed by natural selection.

That there is an exciting cause for both forms I am persuaded, because we find that species which are sufficiently common for us to observe year after year in abundance, are found to be much more subject to variation in some years than in others; and if (presumably) the meteorological differences of one year form another cause, in a single locality of a varying amount of variation in species, we may reasonably conclude that the meteorological differences between one locality and another, continued year after year, will tend to variation in different directions in the individuals of a species common to both. Then if in one locality where the struggle for existence is greater, a peculiar variation is found to carry advantages with it, natural selection steps in and does its work, and, if the advantage is very great, may eventually result in that particular variety supplanting all others. If the advantages were not so great, the particular variety would not be so peculiarly favoured; and if there was no special advantage (but still no disadvantage), then the variety would only be on an equal footing with the other forms, and individuals of that character would vary in number from year to year according as the meteorological conditions (presumably the exciting cause) varied, with a certain percentage for heredity.

By this theory, local varieties and aberrations (both melanochroic and otherwise) may perhaps be accounted for. For example, let us take the ab. *kethlandica* of *Hepialus humuli*. This is a form of the ♂ in which the usual satiny white colour is frequently tinged with yellow, and dark markings, as in the ♀, are more or less apparent. At the time this moth is on the wing there is scarcely any darkness in Zetland, and consequently the hovering white moths must be very conspicuous and easily seen by gulls and other birds, which, I have noticed in other localities, eagerly pursue them. But a ♂ of darker

colour more easily escapes observation, and hence, by natural selection, the propagation of a local variety (probably meteorologically originated) is favoured.

That melanochoiric (or melanic) insects are peculiarly favoured with stronger constitutions and more acute senses, there is not, I think, any reason for supposing. Frequently, in fact, melanochoiric (and more frequently, melanic) individuals are of smaller size than the typical form.

After all, we require many widely extended and repeated observations before we can venture to say that we know anything of the cause of these phenomena. Botanists are aware that the plants of the West Coast are less brilliantly coloured than those of the East; and I think that it is in the west rather than the north that melanochoirism in British insects may best be studied. At the same time I hope that observers in all parts of the country will turn their attention in this direction.

Perth : November, 1876.

---

NOTES ON MR. ATKINSON'S COLLECTION OF EAST INDIAN  
*LEPIDOPTERA*, WITH DESCRIPTIONS OF NEW SPECIES  
OF *RHOPALOCERA*.

BY W. C. HEWITSON, F.L.S.

I send a short notice of the Atkinson collection, and of the naturalist who brought it together. Mr. Atkinson had been for fifteen years Director of public instruction for Bengal, and during that time possessed peculiar facilities for the gratification of his taste, himself visiting the best localities—fortunately also the most healthy—during his holiday time. He had thus made the finest collection of Indian *Lepidoptera* ever brought to this country. He had retired from his educational labours, and had come home with his collections for the future enjoyment of his life; but before settling down to the pleasures of home, he had most unfortunately gone to Italy, where, after a few hours' illness, he died at Rome, on the 15th of January, 1875, at the age of fifty-five.

His collection was sold, and, by the great kindness of Mrs. Atkinson, came into my possession; and I regret that illness has delayed me so long in writing this tribute to the memory of a brother naturalist. The butterflies in number and condition far surpass any which have come to Europe from the same locality.

There are but few species for me to describe, because there are probably not many unknown species in India, and also because Mr. F. Moore, as Curator of the India Museum, enjoys opportunities before other naturalists of becoming acquainted with, and of describing, any novelties that arrive. I have added thirty-five new species from Mr. Atkinson's collection to my own, twelve of which are hitherto unknown, and of some of these I now send descriptions. The grand thing of the collection is the *Butanitis Lidderdalii*, figured by Mr. Atkinson in the Proceedings of the Zoological Society for 1873, the most remarkable addition to the Diurnal *Lepidoptera* since Mr. Wallace made known to us the *Ornithoptera Brookiana*. It is quite distinct from, and much surpasses in beauty, the *Amandia Thaidina* brought to Paris by the Abbé David. There is a female—so difficult to get—of *Teinopalpus imperialis*; there are several specimens of *Amona Lena*, also figured and described by Mr. Atkinson, and with it the other rare species of the same genus, *Amona Amathusia*. There are besides the rare *Limenitis Austenia*, a new *Debis*, a new and beautiful *Zophoessa*, and several *Lycænide*, which were new when Mr. Atkinson very kindly lent them to me to figure and describe.

The moths of the collection, many of which were taken by Mrs. Atkinson, are as fine as the butterflies, and are in the possession of Dr. Staudinger, who can better appreciate their value than our English collectors. They are, however, to be described by Mr. Moore, who tells me that there are several hundred new species.

#### ADOLIAS SATROPACES, *sp. n.*

*Upper-side*: male dark brown: anterior wing projecting at the apex, as in *Cocytus*; marked in the cell by a black line and by two large pale spots bordered with black, by a spot and two short black lines below these, and by another pale, undefined spot nearer the apex; the outer margin, except at the apex, rufous-grey: posterior wing with the outer half of the same colour.

*Under-side* ochreous-yellow: anterior wing with the spots in the cell and a linear sub-marginal band of brown: posterior wing with some scarcely-seen spots before and after the middle.

Female pale rufous-brown: anterior wing with the spots in and below the cell as in the male, marked beyond the middle by six transparent spots, fixed in a transverse band, and one near the apex; crossed near the outer margin from the apex by a dark brown band, which is continued to the middle of the inner margin of the posterior wing: posterior wing with two spots in the cell, and a series of sub-marginal lunular spots of brown.

*Under-side* as above, except that it is orange-yellow, and that the sub-marginal band has its origin at a different part of the apex, and is not continued on the posterior wing,

Exp., ♂,  $2\frac{1}{16}$ ; ♀,  $3\frac{1}{16}$  inch.

*Hab.*: Moulmein.

The female of this species very closely resembles *A. Aphidas*.

*DEBIS SERBONIS, sp. n.*

*Upper-side* rufous-brown: both wings with two sub-marginal brown lines: anterior wing with two indistinct pale spots on the costal margin beyond the middle: posterior wing with a series of three black eye-like spots, and an ocellus near the anal angle.

*Under-side* rufous: anterior wing with a zig-zag black line and a large pale spot, bordered on both sides with black within the cell; the disco-cellular nervure brown, crossed beyond the middle by a dark brown band, bounded outwardly, near the costal margin, by a dull white spot; a white spot near the apex, and below two small ocelli, one of which is incomplete, followed by a band of brown and a sub-marginal band also brown: posterior wing crossed by two brown bands, before and at the middle; a brown line at the end of the cell; a series of six ocelli, the first and fifth larger and more distinct than the rest; the outer margin and a line near it black.

*Exp.*,  $2\frac{3}{8}$  inch.

*Hab.*: Darjeeling.

*ZOPHOESSA ATKINSONIA, sp. n.*

*Upper-side*: male dark brown, rufous towards the base: both wings with a sub-marginal black line: anterior wing marked by several rufous-orange spots; two in the cell; a quadrid band beyond these, three (one bifid) near the apex, and five below the middle: posterior wing with rufous-orange band near the outer margin, marked by five black spots: a sub-marginal rufous line.

*Under-side* rufous-brown: a spot in the cell, which is bordered on both sides with brown, and a continuous band beyond the middle, sinuated and bordered inwardly with dark brown, both yellow; a series of four small white spots near the apex, and two sub-marginal linear brown bands: posterior wing tinted with green near the base, marked by two short bands of yellow, and followed by a band of the same colour; the outer half of the wing rufous-brown, marked by five black ocelli, with rufous iris and pupil of blue: a sub-marginal band of white.

*Exp.*,  $2\frac{1}{8}$  inch.

*Hab.*: Darjeeling.

*DODONA DEODATA, sp. n.*

*Upper-side*: both wings white, crossed near the base and parallel to the inner margin by three bands of brown: anterior wing with the outer half dark brown, marked by ten white spots; four in a band from the costal margin to the anal angle, and two bands of three spots each near the apex: posterior wing with the outer margin broadly brown, traversed by two bands of white spots.

*Under-side* as above, except that several of the small white spots, near the apex of the anterior wing, meet and form a band; that there are two linear white spots near the anal angle, and a linear band leading to two black spots near the outer margin of the posterior wing; and that there is a lobe at the anal angle as in the other species, bordered above by orange-yellow, marked by two black spots.

*Exp.*,  $1\frac{1}{8}$  inch.

*Hab.*: Moulmein.



*MYRINA SYMIRA, sp. n.*

*Upper-side* brown, tinted with purple, the outer margin dark brown: posterior wing with the anal angle dark brown, with two tails, a long one in continuation of the first median branch and a short one inside of it.

*Under-side* rufous-orange: posterior wing with a black spot crowned with silvery-blue at the base of each tail.

Exp.,  $1\frac{1}{10}$  inch.

*Hab.*: Darjeeling.

*HESPERIA CEPHALA, sp. n.*

*Upper-side* dark brown, the fringe brown and white alternately: anterior wing with three transparent white spots and an opaque spot near the inner margin; one at the middle bifid, one at the apex trifid, and one below it: posterior wing with two transparent spots near the middle.

*Under-side*: anterior wing as above, except that the costal margin from the base to the transparent spot, and the outer margin from the apex to the middle, are yellow: posterior wing yellow, with a black spot near the base, a third white spot adjoining the transparent white spots, which are bordered below with rufous-brown: the outer margin rufous-brown.

Exp.,  $1\frac{1}{10}$  inch.

*Hab.*: Darjeeling.

*HESPERIA CERATA, sp. n.*

*Upper-side* dark brown: anterior wing with four transparent white spots; one in the cell sinuated on both sides, two below this between the branches of the median nervure, and one near the apex bifid: posterior wing with a central series of four and five indistinct white spots.

*Under-side* as above, except that both wings have a sub-marginal series of pale spots; that the posterior wing has a white spot near the base, and a transverse central series of six distinct white spots.

Exp.,  $1\frac{1}{10}$  inch.

*Hab.*: Darjeeling.

Oatlands, Weybridge: *October*, 1876.

LIST OF THE BUTTERFLIES NOW KNOWN TO INHABIT NEW ZEALAND, WITH DESCRIPTIONS OF A NEW GENUS, AND A NEW SPECIES, IN THE COLLECTION OF JOHN D. ENYS, ESQ.

BY ARTHUR G. BUTLER, F.L.S., &c.

NYMPHALIDÆ.

DANAINÆ.

1. *Danaïs Archippus*, Fabricius.—Both sexes.

SATYRINÆ.

PERCNOIDAIMON, *n. gen.*

Allied to *Erebia*, but in general pattern more like *Leptoneura*; the antennæ more distinctly clavate; the palpi shorter and broader; the lower radial of primaries emitted above the angle of the dis-

cocellulars instead of below it; the lower discocellular of secondaries more oblique and less sigmoidal; the legs smoother. Type *P. Pluto*.

2. *Pernodaimon Pluto*, Fereday, = *Erebia merula*, Hewitson.—Although Mr. Fereday only describes this species as black, not mentioning the ocelli, his name will have to stand, since there is no other black *Erebia* in New Zealand.\*

3. *Argyrophenga antipodum*, Doubleday.—One of Mr. Enys's specimens has only two ocelli on the upper surface of secondaries, and no silvery streaks at the apex of the under surface of primaries.

### NYMPHALINÆ.

4. *Pyrameis Kershawii*, M'Coy.—One of the examples from North Island.

5. *Pyrameis Itea*, Fabricius.

6. *Pyrameis Gonerilla*, Fabricius.

7. *Diadema Nerina*, Fabricius.—One male.

### LYCÆNIDÆ.

#### LYCÆNINÆ.

8. *Lycæna Phæbe*, Murray, = ? *L. Alsulus*, var. Herr.-Sch.—I believe *L. Alsulus* to be simply a brown female of the above, in which case it will take priority.

9. *Lycæna Oxleyi*, Felder.

10. *Chrysophanus Boldenarum*, White.—This species is said to be common.

11. *Chrysophanus Salustius*, Fabricius.—A variety occurs in North Island, with the wings much brighter below.

12. *Chrysophanus Enysii*, n. sp.—♂. Above very like the female of *C. Salustius*. Wings bright tawny; veins black; a rather broad dark brown border round each wing; an equally broad transverse sigmoidal band of the same colour across each disc; base densely and finely irrorated with black scales; primaries with a small round spot in the cell, a similar spot below the origin of the first median branch, and an oblong spot on the discocellulars, black: secondaries with a transverse dark brown spot on the discocellulars; several tawny spots on the outer border near anal angle; wings below much paler; primaries deep ochreous; costal area dull sulphur-yellow; outer border brownish, paler towards apex, bordered within by black spots towards external angle; discal band of upper-side converted into a row of blackish spots; basal spots smaller and narrower than above; secondaries stramineous, becoming sordid sulphur-yellow towards the

\* In the "Transactions of the New Zealand Institute," vol. viii, pp. 302–304, pl. ix (May, 1876), Mr. Fereday re-describes and figures this insect as *Oreina* (?) *Othello*, stating that he changes the name *Pluto* because it had previously been "appropriated" to another butterfly.—A. G. B.

base; outer border pale clay-brown, an irregular narrow discal band, a sub-costal spot, the discocellulars, and a spot on interno-median area, all of the same colour: body above olivaceous; prothorax slightly tawny; head blackish, with the margins of the eyes and sides of the palpi white: body below whitish. Expanse of wings, 1 inch 3 lines.

♀. Very much darker, so that the intervals between the bands are reduced to golden-orange spots, the bands and veins themselves being deep chocolate-brown; basal scaling more golden; wings below brighter, the secondaries crossed by a broad, strongly-elbowed reddish-brown band, which tapers to the abdominal margin; an indistinct sub-marginal series of conical spots of the same colour, with whitish lilacine centres: body above much brighter than in the male; below tinted with rosy. Expanse of wings, 1 inch  $3\frac{1}{2}$  lines.

♂, ♀, North Island (J. D. Enys).

13. *Chrysophanus Feredayi*, Bates.

## PAPILIONIDÆ.

### PIERINÆ.

14. *Catopsilia Catilla*, Cramer.—A single male of this species is in the collection.

The whole of the above-mentioned butterflies are in the collection of Mr. Enys.

British Museum: October, 1876.

## DIAGNOSIS OF A NEW SPECIES OF *PSALLUS* (*HEMIPTERA-HETEROPTERA*).

BY O. M. REUTER (HELSINGFORS).

*PSALLUS WOLLASTONI*, n. sp.

*Testaceus, nitidus, magis minusve rubedine tinctus, nigro-pilosulus, subtilissime flavo-pubescent; antennis articulis duobus ultimis simul sumtis secundo longitudine sub-æqualibus, quarto tertio circiter duplo brevior (♂); femoribus magis minusve rubidis, anterioribus innotatis, posticis tantum subtus obsolete et parce fusco-punctatis, tibiis spinis nigris validis e punctis minutissimis tantum in basi tibiæ conspicuis nascentibus; cuneo testaceo, margine interno ad apicem usque sat late saturate rubro; membrana fere innotata, venis rufescenti-testaceis; vertice oculo circiter duplo (♂) vel fere  $2\frac{1}{2}$  (♀) latiore. Long. 2½—3 mm. Species pubescentia flava subtili, pictura insigni cunei, femoribus viz fusco-punctatis, tibiisque punctis ad basin spinarum minutissimis, bene distincta.*

Two specimens captured by Mr. Wollaston in Madeira, and kindly communicated for description by Dr. Buchanan White.

Abo, Finland: 8th November, 1876.

# DESCRIPTIONS OF NINE NEW SPECIES OF BUPRESTIDÆ.

BY EDWARD SAUNDERS, F.L.S.

The types of these species are in the collection of the British Museum.

## MELOBASIS CUPREOVITTATA.

*Fusca; capite cupreo, piloso, fortiter ruguloso-punctato; thorace punctato, lateribus rotundatis; elytris punctatis, lateribus postice denticulatis, utrinque vittis duabus cupreis, unâ basali, alterâ apicali ornatis. Subtus cuprea, lateribus pilosis.*

Head coppery. Thorax cyaneous-brown. Elytra brown; each with two longitudinal vittæ, and a spot on the lateral margin coppery-golden, of these vittæ the upper one begins at the base near the shoulder and gradually approaches the suture, reaching to just beyond the middle of the elytra; the posterior one begins just beyond the middle, but nearer the lateral margin, and does not reach the apex: the marginal spot is placed above the middle; beneath coppery-brown, centre brilliantly coppery.

Head rugosely punctured and covered with greyish hairs. Thorax, at the base, half as broad again as long; anterior margin emarginate, sides rounded, base very shallowly bisinuate; surface punctured, the punctures closer together and deeper on the sides, which are covered with grey hairs. Elytra twice as long as wide, punctured, each with four slightly raised lines, including the suture; sides denticulate near the apex, which is largely rounded. Beneath, punctured, sides and legs covered with long, adpressed, silvery-grey hairs.

Length, 6—7 lines. Breadth, 2—2½ lines.

Hab.: Gawler, Australia.

## MELOBASIS COSTATA.

*Cupreo-fusca; capite thoraceque punctatis; elytris punctatis, utrinque costis quatuor nitidis ornatis, marginibus postice denticulatis, apice utrinque spinoso. Subtus punctata, lateribus albopilosis.*

Entire insect coppery-brown.

Head flat, deeply punctured; pubescent above the mouth. Thorax, at the base, three-quarters as broad again as long; anterior margin smooth, very slightly raised, and somewhat emarginate; sides scarcely rounded behind the anterior angles; posterior angles acute; base with a shallow median lobe; surface punctured, especially at the sides. Elytra twice as long as wide, finely and very closely punctured, each with four raised smooth lines, those on the sides less distinct than those nearer the suture; sides slightly sinuate below the shoulder, finely denticulate posteriorly, apex of each terminating in a sharp spine. Beneath punctured, sides and legs hairy.

Length, 7—8 lines. Breadth, 2—2½ lines.

Hab.: Swan River.

Differs from *M. nervosa*, Boisd., by the straighter sides to the thorax, the more strongly marked costæ of the elytra, and also by the apex of each elytron terminating in a sharp spine.

#### MELOBASIS RUBROMARGINATA.

*Ænea*; capite punctato; thorace punctato, margine anteriori rotundatâ; elytris punctatis, lateribus cupreis, utrinque costis quatuor elevatis, marginibus posterioribus denticulatis. Subtus viridis, punctata, lateribus igneo-cupreis.

Above bronzy. Sides of thorax with a slight coppery tinge. Margins of the elytra coppery-red. Beneath green; sides of breast and abdomen coppery-red.

Head deeply and rugosely punctured, with a few scattered hairs. Thorax, at the base, two-thirds as broad again as long; anterior margin produced in the centre and at the anterior angles; sides slightly rounded; greatest width of the thorax just behind the middle; posterior angles nearly right angles; base shallowly sinuate; surface punctured, very closely so on the sides. Elytra twice as long as wide, punctured, each with four raised costæ; sides sinuate below the shoulders, denticulate from behind the middle, apex of each somewhat pointed. Beneath and legs punctured, sides with a few very short white hairs.

Length, 6 lines. Breadth, 2½ lines.

Hab.: N. W. Australia.

#### MELOBASIS IGNICEPS.

*Æneo-fusca*; capite igneo-cupreo, albopiloso; thorace punctato, lateribus rotundatis; elytris punctatis, lateribus postice denticulatis, utrinque lineis duabus elevatis irregularibus ornatis. Subtus punctata.

Head fiery-red, rugosely punctured, covered with silvery hairs. Thorax, at the base, three-quarters as long as wide; anterior margin rounded, slightly produced at the angles; sides rounded, posterior angles acute, being slightly produced towards the shoulders; base, with a largely rounded median lobe; surface punctured, especially on the sides; dorsal line indicated at the base by a large puncture; sides, each with a small ovate punctured depression just above the hinder angle. Elytra a little more than twice as long as wide, closely and rugosely punctured, each with two slightly raised vein-like lines uniting behind the middle, and not quite reaching the apex; sides sinuate above the middle, posterior margin denticulate; apex of each rounded. Beneath and legs punctured, covered with short white hairs.

Length, 7 lines. Breadth, 2 lines.

Hab.: N. W. Australia.

#### MELOBASIS LETA.

Capite thoraceque cæruleo-viridibus, punctatis; elytris viridibus, punctatis, costis quatuor cupreis utrinque ornatis, lateribus concoloribus, apicibus rotundatis. Subtus aureo-cuprea, punctata, pedibus antennisque cyaneis.

Head and thorax bluish-green, the latter with coppery reflections. Elytra green, each with four raised lines, and the margin cupreous. Beneath coppery-golden, legs and antennæ cyaneous.

Head punctured, covered with long white hairs. Thorax two-thirds wider than long at the base; anterior margin produced in the centre and at the angles; sides rounded, gradually converging to the base; widest just behind the anterior angles; base nearly straight; surface deeply punctured, especially at the sides; dorsal line faintly marked. Elytra nearly twice as long as wide, deeply punctured, each with four raised costæ; sides denticulate behind the middle, apex of each finely rounded. Beneath and legs punctured, covered with long grey hairs.

Length, 5 lines. Breadth, 1½ lines.

Hab.: Australia, Swan River.

N.B.—I have another specimen almost entirely coppery.

#### MELOBASIS VIRIDICEPS.

*Aenea; capite viridi, punctato; thorace punctato, lateribus rotundatis, basi recta; elytris punctato-striatis, interstitiis nonnihil elevatis, marginibus posticis denticulatis, apice acuta. Subtus punctata, pedibus anticis viridibus.*

Bronzy; head and front legs green. Thorax with greenish reflections on the sides.

Head punctured, covered with scattered short white hairs. Thorax three-quarters as long as wide: anterior margin slightly rounded in the middle and produced at the angles; sides rounded, base nearly straight; surface deeply punctured, especially on the sides; dorsal line smooth. Elytra rugosely punctate-striate, twice as long as wide; posterior margins finely denticulate; apex pointed. Beneath and legs punctured.

Length, 5 lines. Breadth, 2 lines.

Hab.: N. S. Wales.

#### MELOBASIS OBSCURA.

*Cupreo-ænea, punctata; capite capillis albis brevissimis obsito; thorace lateribus rotundatis; elytris subtiliter punctatis, marginibus posterioribus denticulatis, apicibus rotundatis. Subtus viridi-purpurea, pedibus anterioribus antice viridibus.*

Coppery-bronze. Beneath with green reflections, front legs green anteriorly. Head deeply punctured, covered with exceedingly short, scattered, white hairs. Thorax, at the base, three-quarters as long as wide; anterior margin rounded in the middle, and slightly produced at the angles; sides rounded, base straight; surface closely punctured and transversely rugose, punctuation larger on the sides. Elytra slightly wider than the thorax at their base, one and three-quarters longer than wide, rugosely punctured, with two faintly raised irregular lines on each; sides sinuate below the shoulders; posterior margins denticulate; apices rounded. Beneath and legs punctured; sides with a few scattered silvery-white hairs.

Length 5 lines. Breadth, 2 lines.

Hab.: Adelaide.

### MELOBASIS VIRIDIS.

*Viridis; capite thoraceque punctatis; thoracis lateribus post medium rotundatis; elytris punctatis, lateribus postice denticulatis, apice utrinque rotundatâ. Subtus punctata.*

Bright green, suture posteriorly very finely margined with purple.

Head flat in front, deeply and closely punctured. Thorax, at the base, three-quarters as wide again as long; anterior margin rounded, slightly produced at the angles; sides rounded, their greatest divergence being just behind the middle; base straight; surface closely and transversely punctured, especially on the sides. Elytra twice as long as wide, deeply and closely punctured, each with two very faint raised lines on the disc; sides slightly sinuate above the middle, finely denticulate posteriorly; apex rounded. Beneath and legs deeply punctured.

Length,  $4\frac{1}{2}$  lines. Breadth, 2 lines.

Hab.: Adelaide.

NOTE.—I have one specimen in which the elytra are of a golden-coppery hue.

Spencer Park, Wandsworth:  
30th October, 1876.

### NOTES ON BRITISH TORTRICES.

BY CHAS. G. BARRETT.

(continued from vol. xii, page 8.)

*Stigmonota dorsana*, Fab., and *orobana*, Tr.

My former notes on these species (E. M. M., x, p. 148) were written from insufficient information; for instance, *Orobis niger*, as pointed out by Dr. F. Buchanan White, is a rare Highland vetch, and could not be the food-plant of a species found in the North of England.

For some years past, my friends Mr. J. Sang of Darlington, and the late Mr. T. Wilkinson of Scarborough, endeavoured to work out the life-histories of these two species, with, until the past season, but partial success.

*Orobana* appears to be exceedingly local, and is found on the cliffs to the north of Scarborough, among *Vicia sylvatica*, over which plant it flies commonly on sunny afternoons in July. It has also repeatedly been reared from larvæ in the pods of that plant. Mr. Sang thus describes the larva:—"When full-fed, dark yellow, with a decided brown tinge; head and second segment nearly black; spots prominent. When younger, some are lighter yellow, with the spots distinct but not so prominent." Full-fed early in September, when it leaves the seeds and spins a tough cocoon among rubbish.

I reared this species myself last July from pods of *Vicia sylvatica* received from Mr. Wilkinson.

*Dorsana* appears to be more widely distributed. Mr. Hodgkinson took it at the end of May, 1844, at the Pass of Killiecrankie, and it occurs near Darlington, Scarborough, and Newcastle-on-Tyne. It is taken among *Orobis tuberosus*, and for years Messrs. Sang and Wilkinson found larvæ in the pods of that vetch, which are thus described by Mr. Sang:—"The larva in *Orobis* pods, which I take to be *Dorsana*, is as large as that of *Orobana*, but deep yellow, without the brown tinge, and the usual spots invisible. Head very little darker than the body. It shows no external trace of its presence in the pods, which must be opened to find it. It eats right through the middle of all the seeds, and then goes, I think, to other pods, but still without there being any mark to show that it has done so. Full-fed generally at the end of July. Spins a thick cocoon among rubbish, or, in confinement, often within the empty split pods of the vetch."

It is only in this last season that this larva has been reared. A very fine ♀ *dorsana* emerged on June 17th from larvæ in pods of *Orobis tuberosus*, sent by Mr. Wilkinson in the previous summer.

Mr. Sang has found larvæ precisely similar in pods of yellow vetch (*Lathyrus pratensis*?), and probably these also will belong to *dorsana*; but it is difficult to pronounce with certainty, since larvæ precisely like those of *Orobana*, found in pods of *Genista tinctoria*, produced *Catoptria ulicetana*.

As Wilkinson confused the two species, or rather described and figured *Orobana* under the name of *dorsana*, it may be well to point out the distinguishing characters. *Dorsana* is blackish-brown; fore-wings narrow, pointed, with oblique hind margin; costal streaks indistinct; dorsal blotch *elbowed*, and uniformly narrow. *Orobana* is olive-brown; fore-wings broader than in *dorsana*, not pointed; hind margin rounded; costal streaks white and very distinct; dorsal blotch broad, curved, and clubbed.

*Eupæcilia hybridella*, Hüb. (*carduana*, Z.).

This species was reared by the late Thomas Wilkinson of Scarborough from the seed-heads of common cow-thistle (*Sonchus oleraceus*). He gave me no description of the larva, but wrote: "These larvæ are very hard to keep in confinement until they make their cocoons. They usually change to pupa in May. I know of no larvæ that feed up so rapidly as they do." From this, it is evident that they remain as larvæ in the cocoons for nine or ten months. I have seen reared specimens, which are undoubtedly *hybridella*.

Pembroke: 15th November, 1876.



**METAMORPHOSES OF *XYLOPHAGUS CINCTUS*, F., AND  
*X. ATER*, F.**

BY F. BUCHANAN WHITE, M.D., F.L.S.

When in Braemar a year or two ago I occasionally came across some very curious dipterous larvæ, living under the bark of dead pines and birches. These larvæ, though found on such very different plants, were so similar in appearance, that I concluded that they belonged to one species; and it was only on rearing them to the perfect state that I found that the one under pine bark belonged to *Xylophagus cinctus*, F., and the other to *X. ater*.

The following is a description of the larva and pupa of *X. cinctus*, from notes made at the time:—

Larva cylindrical, slightly tapered to each extremity; shining dirty whitish; integuments tough; segments twelve. The head is a shining black, horny, triangular beak, slightly flattened, and with the apex prolonged. Near the middle of the prolongation is a narrow longitudinal furrow (or opening?) on each side. On each side of the centre of the apex is a slit or furrow, and near the apex below is an oval opening (the mouth). The head is furnished with a few erect brown hairs. The 2nd segment is much wider than the head, and nearly covered above with a square chocolate-coloured scaly plate, lacerated in several places, more especially by two longitudinal lines which divide it into three equal parts. Near the posterior angles of the plate are the oval spiracles. There is a trace of the plate on the under-side of the segment, on the outer and anterior edges, widest at the anterior angles, and nearly obsolete in the centre of the anterior margin. Between the 2nd and 3rd segments is a series of small, square, brownish scales, rounded at the ends. This series is continued all round the division between the segments, but is more or less interrupted at the sides, and the scales are half on one segment and half on the other. There are similar series between all the other segments, but the scales are smaller and placed in a double row, one on each side of the fold. 3rd and 4th segments, with shining chocolate-coloured plates, as on the 2nd, but narrower (on the 4th narrower than on the 3rd), and lacerated in a similar manner. No plates on the under-side, and no spiracles. 5th to 11th segments similar to each other. At the centre of the anterior margin (except of the 11th segment above) is a rather broad space (occupying about one half the breadth), covered with rows of erect brownish corneous points, small in the three or four uppermost rows, but larger, and connected—the points of one row with those of the other—by corneous ridges in the two lower rows. About a fourth of the length from the hind margin is a row—going round the segment (except on the under-side of the 5th)—of flattened spiny hairs, of various lengths, adpressed and directed backward; and (except on the 5th segment) halfway between this row and the front margin, is a short oblique row of small brown scales (similar to those between the segments), lying halfway between the mesial line and the sides. The under surface of the segments is like the upper, but the oblique line is longer. On the side of each segment is a spiracle (small, round, and apparently “blind”), with a short, stout, triangular spine below it. The 12th segment is quad-

rate, rounded at the apex. A diamond-shaped, shining, chocolate-coloured plate occupies the apical third, and the vestiges of a plate covering the rest of the segment are apparent in two longitudinal patches on each side of the anterior angle of the diamond. Near the posterior angle are two short horn-like points, divergent and curved upwards, each with three or four brown hairs. Apex of the horns black. Anterior, and a little exterior to the base, of the horns, are the large, oval, black spiracles. The under surface of the segment is convexly rounded, with, near the anterior margin, a fleshy oval proleg, in the centre of which is the anal opening. Round the margin is a double series of corneous points, and a V-shaped line of similar points is situated on each side, and attached by one arm of the V to the oval circlet of points; the open end of the V faces forward.

The pupa is cylindrical, slightly narrower in front and tapering behind. Dirty yellowish-ochreous in colour (ochreous-olive, darker at the sides, and head and thorax shining blackish-brown before the exclusion of the imago). Head, thorax, and appendages not very separable. Head situated in front of thorax; hind-margin deeply bisinuate. In front of the head are two "respiratory tubes;" these are joined together at the base for a short distance, and are then abruptly (at right angles) bent outward and slightly downward; below they are joined to the head for a short way by a thin membrane; below them two tubercles represent (perhaps) the antennæ-covers. From the head there arises behind on each side a semi-circular row of long, curly, pale brown hairs.

Thorax: the leg-coverings lie parallel to each other, between the wing-covers, which are of the same length as the third pair of legs, and show the nervures.

The spiracles (one on each side of thorax and of the first seven segments of the hind-body) are prominent and truncate at the apex, which is hour-glass shaped, but cleft to the base at the middle of the anterior side. Hind-body with eight well-marked segments (the last segment consisting perhaps of two united segments). Round each of the first seven segments runs, near the hind margin, a row of long brown, spiny hairs; a short, stout spine within and below the base of the spiracles; and below that again is a slightly-curved impressed line, running longitudinally across the segment, and a similar line on the outer side; and on the ventral surface an impressed line runs obliquely from the longitudinal lateral line to the posterior ridge, and bears short, flat, triangular spines. Eighth segment somewhat quadrate, with a conical end. Above, at the base of the cone, is a semi-circle of spines, of which the end ones are largest and situated on a tubercle. The cone terminates in two conical, spiny points; below, at the base of these two conical points, are two shining callosities; in front of them two others not so shining; and in front again two more. About the centre of the segment are two rugose tubercles, and near the edge of the segment, on each side, a deep, longitudinal furrow.

Length of ♀ five-eighths of an inch; ♂ similar, but much more slender, and length nearly half an inch.

A day or two before the imago emerges the colour of the puparium is darker and the hairs on the hind-body of the imago are so distinctly visible that they look as if they were on the exterior surface of the puparium.

The larva lives beneath the bark of dead fir trees (*Pinus sylvestris*), where it feeds on other larvæ. I once saw one with a small yellowish dipterous larva impaled on the beak-like head, and I

believe it sucks the juices of its prey. The larva hibernates, becoming a pupa about the end of May or June, and the imago emerges in June and July. The pupa is found in the decaying matter between the bark and wood of fir trees. The imago may often be found resting on the bark of the same trees.

Zetterstedt (Diptera Scandinaviæ, i, 129) says that *X. cinctus* inhabits the trunks of *Pinus* and *Abies*, and gives a short description of the pupa. He reports it as rare in the south, but more frequent in the north of Scandinavia. I am not aware that *Xylophagus cinctus* has been previously recorded as a native of Britain.

*Xylophagus ater*. I am sorry that I cannot give a detailed description of the larva and pupa of this species, because till I reared the imago I considered the larvæ that I found to belong to the same species as those of *X. cinctus*, to which they have a very great resemblance, and consequently I omitted taking notes. The larva lives between the bark and the wood of dead birch stumps, almost invariably in company with the larva of *Pyrochroa pectinicornis*, on which it probably feeds, though I never saw it attacking that or any other insect. The habits and times of appearance of *X. ater* are the same as those of *X. cinctus*. Zetterstedt (i, 128) states that the imago frequents the trunks of living birches in North Scandinavia, and of aspens in South Scandinavia. At p. 2947 (vol. viii) he says: "Larvæ hujus speciei in larvis Pyrochroæ coccinæ prædantes vivunt, teste D. Drewsen;" and in vol. xiii (p. 4929) he mentions that the pupa had been found under the bark of a beech. In the "Modern Classification of Insects" (ii, 536), Professor Westwood gives a short description and figure (127, 18 and 19) of the larva, from specimens sent by M. Van Roser, and found by him in decayed birch wood. Schiner, though he includes both species in his "Diptera Austriaca," gives little information regarding the larvæ.

As *X. ater* occurs in England, the larvæ will probably be found in company with those of *Pyrochroa coccinea*.

Perth: November, 1876.

*Captures at ivy-bloom*.—During the last half of October, I visited various places in the South West of England, and examined the ivy-bloom at each of the localities.

On the 14th October, I arrived at Tintern, and in the bright sunshine observed, among a number of *Vanessa Atalanta*, a specimen of *Grapta C. album*; in the evening I took *Dasycampa rubiginea* and a few *Cidaria psittacata*, the common species of *Noctuæ* being abundant. On the 17th, at Penzance, I found on the under-

cliff, between the villages of Newlyn and Mousehole, a quantity of ivy in a most luxuriant state of bloom, but the only species I noticed, beyond the common ones, was *Agrotis saucia*, which was rather plentiful.

On the 21st, I reached St. Mary's, Scilly, and found the ivy in the island of a most scanty description, and only observed two species of moths, viz., *Agrotis segetum* and *Miselia oxyacanthæ*. At Torquay, from the 27th to 31st, I took the following, viz., *Agrotis saucia*, *Xylina rhizolitha*, *Xylina semibrunnea*, *Xylina petrificata*, *Epunda nigra*, and *Cidaria psittacata*.—A. H. JONES, Shrublands, Eltham: 6th November, 1876.

*Deiopeia pulchella* at Torquay.—Whilst on a recent visit to Torquay, Mr. Terry of Babbacombe, showed me on his setting-boards two specimens of *Deiopeia pulchella*, the one taken by him on the 17th October, at rest on a spray of ivy-bloom, and the other on the 19th, on a rock, both in the same locality near the sea. They are now in my possession.—ID.: 6th November, 1876.

*Deiopeia pulchella* at Brighton.—A specimen of this somewhat scarce moth was taken a few weeks ago on the race-hill, just above my house. The insect appears to fly about dusk.—GEO. DAWSON ROWLEY, Chichester House, East Cliff, Brighton: 21st October, 1876.

*Deiopeia pulchella* at Neath.—I have much pleasure in notifying the capture here of *Deiopeia pulchella*, which will probably be an interesting note for the Magazine.

Ever since our capture of the American *Danaus Archippus*, all my people here have been very keen in bringing me specimens of all sorts—and to-day one of my men brought me a noble specimen of this lovely insect (*Deiopeia pulchella*), in excellent order. It was caught flying in the day-time on a wild hill-side, where two years ago a wood was cut down, and now there is a strong undergrowth of shrubs, briers, and fern.

The best general captures of late are *Agrotis saucia* and *Epunda nigra*, which latter seems especially partial to the flowers of *Arbutus*.—JOHN T. D. LLEWELYN, Ynisgyrwn, Neath: October 19th, 1876.

*Is Dianthæcia casia double-brooded?*—Is it not likely that the fresh specimens of *Dianthæcia casia* taken by Mr. Birchall in August (E. M. M., vol. xiii, p. 143) were the produce of the June moths? Several years ago, when taking *D. casia* and *capsophila* in June, in the same locality as Mr. Birchall took his specimens, I also at the same time found larvæ of *capsophila* in all stages of growth; and many of these larvæ produced imagoes in two months, that was, in August following.

I did not then get any larvæ of *casia*, but it appears not improbable that two such closely allied species, flying together in June, and the larvæ of both feeding on the same food (the seed-capsules of *Silene maritima*), should have a history pretty much in common.—GEO. T. PORRITT, Highroyd House, Huddersfield, November 6th, 1876.

*Description of the larva of Epunda lutulenta.*—My knowledge of the history of this species is not quite so satisfactory as I could wish, as a brood of larvæ I fed

from eggs received on the 20th September, last year, from the Rev. P. H. Jennings, M.A., of Gravesend, died off before having undergone their last moult. It is very likely however that the adult markings had been assumed, though as *Epunda lichenea* totally changes in appearance (from green to brown) at the last moult, it is quite possible that *lutulenta* may do the same. However, as Mr. Jennings was unable to send me eggs again this year, it is perhaps advisable to say as much about it as I know.

The egg is distinctly ribbed; at first it is pale yellow, but soon becomes pink, it has a rather large purple spot in the centre, and is encircled with a conspicuous band of the same colour. Before hatching (which event took place on the 16th of the following month), they changed to deep slate colour.

The newly emerged larva is hairy, dark green, the head black. Not being able to procure the reputed food, I tried them with a large variety of other low plants, and eventually they settled and promised to do well on ordinary garden grasses. They grew exceedingly slowly however, and began to hibernate when not more than a quarter of an inch long. Before the middle of February they recommenced feeding, and then, in preference to grass, on dock and other low plants. At the end of April, I described them as follows:—Length, about an inch, of moderate bulk in proportion, and uniformly cylindrical throughout; the head has the lobes full and rounded, and is about as wide as the second segment; segmental divisions distinct, skin smooth and semi-translucent; a few very minute hairs which are most noticeable on the head.

Ground colour, a pleasing bright apple green, yellowish at the segmental divisions; the head also bright green and polished; dorsal stripe composed of a dark green pulsating vessel; subdorsal lines clear and distinct, yellowish-white; spiracular stripes rather broad and very conspicuous, white, tinged with green; spiracles distinct, clear white. Ventral surface, legs, and prolegs, uniformly bright green, with the segmental divisions yellowish.

After the end of April, we had several weeks of almost continuous east wind, with intensely cold weather, to which every larva succumbed.—ID.: November 8th, 1876.

*Note on Epunda lutulenta, var. luneburgensis.*—On looking at my series of this species, I find one specimen (received from Dr. Trail, and taken near Aberdeen) which agrees exactly with H.-S. 428, *luneburgensis*. Another example from Forres (Mr. Norman) is like H.-S. 405, *lutulenta*, but rather smaller, and not markedly different from my English examples.—F. BUCHANAN WHITE, Perth: November 1st, 1876.

*Larva and food-plant of Pachnobia hyperborea (alpina, Westw.).*—On the night of the 26th July last, I found at rest, near the top of Schiehallion, a ♀ specimen of this interesting species, depositing eggs on crowberry (*Empetrum nigrum*). Upon placing her in a box with some of the food-plant, the eggs were freely laid to the number of 21. The eggs when first laid, were a pale yellow, almost white, and afterwards changed to a reddish-brown. The young larvæ hatched out in twenty days, and fed freely upon crowberry and bilberry, preferring the former.

The larvæ now, November 16th, are about 4 lines in length, and of a dull brownish colour, with scarcely any markings, and when touched roll into a ring, similar to many of the *Agrotis* larvæ. Dr. Staudinger's description of the pupa corresponds with one that I have from Rannoch, except that I fail to see *four* curved spines, mine has only *two*.

I quite agree with Dr. Standinger, that the larvæ may hibernate twice, as the top of the mountain where my ♀ was caught is now covered in snow, and will remain so till next May.

I have never caught a specimen at a less elevation than 3,000 feet, in fact the highest points at which the food-plant exists, and every specimen caught is hard earned; what with the dense fog and extreme cold it is almost unbearable to stay upon the mountains all night, but once up you must stay there till morning or risk a broken neck in the descent. They do not appear to come to sugar, but fly wildly about in front of the thick fog or mist, which makes it necessary to wring out your net every few minutes.—E. G. MEEK, 56, Brompton Road, S.W. : November, 1876.

*Anezychia bipunctella*, Fab. (*echiella*, Hübn.)—A single specimen of this beautiful species (of which Mr. Stainton says in the Manual "reported to have been taken many years ago near Aylesbury and Dover," and which was placed by Mr. Doubleday among the *reputed* British species) was sent to me a few days ago for identification. It was taken flying over a patch of *Echium* on the south coast of Kent, in August last, by Mr. F. W. Andrewes, of Reading. It is highly satisfactory to see this handsome species—one of the largest of the *Tineina*—restored to our lists.—CHARLES G. BARRETT, Pembroke: 15th November, 1876.

*Notes on some Tineina observed in 1876.*—*Dasystoma salicella*: bred from larva feeding on *Populus tremula*.

*Ornix anglicella*: bred from larvæ feeding on *Pyrus torminalis*. Both larva and imago have been compared with authentic specimens of *anglicella* from hawthorn.

*Laverna epilobiella*, Römer: having attended to this species during three years, I am able to say that the accounts of its pupation given at p. 184, vol. xi, "Nat. His. Tin.," and by me at p. 238, vol. xi, "Ent. Mon. Mag.," though appearing contradictory, are quite reconcilable. In the state of nature, as I found by examining the food-plants in its habitat, the full-fed larva quits its mine and makes a new one (in some uninjured portion of the growing leaf), of a size about sufficient to contain its cocoon, which it then constructs within; and it does the same in captivity when it has only healthy growing plants standing quite free of each other within reach. When, as is usually the case in confinement, the plants are injured, crumpled, or more or less dried or decayed, the larva avails itself of any convenient corner to spin its cocoon in. One or two larvæ spun up in their old mines; and one upon the soil, its white cocoon being coated all over with earth.

*Tischeria dodonæa*: bred this for the first time. Having kept the larvæ in a nearly air-tight glass in a cold place till the middle of May, I then placed them upon moss and moistened the surface of their mines daily, or every second or third day, as the heat and dryness of the air varied; by these means, breeding twenty-one moths from twenty-three unstung larvæ. About two-thirds of the larvæ fall a prey to parasites.

*Tischeria angusticollella*: some larvæ of this insect were full-fed in August, and some attained the moth state the same month in a state of nature; other larvæ quite young appearing in October. The larva of this insect, like the others of its genus, remains unchanged through the winter.—J. E. FLETCHER, Pitmaston Road, Worcester: October, 1876.

*Thecla W-album* in *Worcestershire*.—As I believe this insect has been only once recorded from this district (E. M. M. ii, 189), it may be worth while to state that a young collector recently informed me that he caught numerous specimens on thistles, near Powick, on one day in the beginning of July, 1875; and, also, that I caught a single worn example on the 24th of July last, at the same place.—ID.

*Galls of Nematus gallicola occurring over water*.—A colony of the larvæ of this insect inhabits a willow growing by the river Teme, at Powick, the vast majority of which occur on the branches overhanging the rapid current of water. This, being contrary to the received opinion of the creature's habit, seems deserving of notice.—ID.

*Morayshire Noctua and Hemiptera-Heteroptera*.—During the past season, I have only added two species of *Noctua* to the list of Morayshire insects: these are *Xylophasia lithoxylea* and *Tetthea subtusa*; the first at sugar, the latter from heather near aspens at Relugas.

In turning over stones in a pine wood here, I find a rather rare bug, *Eremocoris plebeius*, not uncommon; yesterday I took thirty-one specimens, and saw others in the larva state. This is probably the same locality that yielded the first British specimen to Mr. Hislop, for I remember this gentleman often searched the wood for *Coleoptera*.—G. NORMAN, Cluny Hill, Forres: 15th October, 1876.

*Scarcity of autumnal Homoptera*.—On the 18th October, at the foot of the Addington Hills, I beat out of various trees, but chiefly Scotch and spruce fir, *Psylla pineti*, Flor., *Ps. fumipennis*, Först., *Trioza hamatodes*, Först., and *T. albiventris*, Först., and from whitethorn *Psylla mali* var. *rubida*. The first two, although not rare, were not so plentiful as on the 26th October last year at the same place, the others were very scarce, more so than a year ago; and *Psylla ferruginea* and *Aphalara polygoni*, then taken sparingly, did not now appear at all.

*Typhlocybidæ*, of which many species occur at this season in abundance, were very scarce; this has also been the case elsewhere within my knowledge, for, at Lee, such species (notably *T. ulmi*, which in windy weather settles on the fences and sits on my windows by dozens) have been only casual visitors. I think there can be but little doubt that the continued rough weather of September and first half of October played havoc among these tender legions, and that their typical habit of moving from one side of a leaf to the other did not avail against the wind that swept and the rain that washed both sides.—J. W. DOUGLAS, Lee: 31st October, 1876.

*On the transformation of Trombidium*.—I read Mr. R. H. Meade's note on parasitic *Acari* in the last No. of Ent. Mo. Mag. It may interest you to know that I have bred, several times, the scarlet *Trombidium* that infests *Phalangida*, and have invariably found them turn into the oval pupæ (?) he mentions. These pupæ, however, I have only once succeeded in keeping alive, and that one occasion a scarlet, velvety, 8-legged mite emerged after twenty-two days. I also noticed that the *Trombidii*, after the death of the "harvest men" on which they fed, would kill one another, and that they would feed on other insects, e. g., on bluebottle flies, and once on a Lepidopterous larva.—T. D. GIBSON-CARMICHAEL, All Saints' Parsonage, Newton Stewart, N.B.: October, 1876.

*Meloë and Mylabris as cures for hydrophobia.*—At the Meeting of the French Entomological Society, 13th September, 1876, M. Reiche communicated the following notes, sent to M. de Sauley (père) by his correspondent M. Chevavarie from Gabès, in Tunis. The latter says :—"I make known to you the Arab remedy for hydrophobia. It consists of two species of beetles, of which I send specimens. They were given to me south of the Ouderna by a man of the tribe of the Amerna ; he possesses a dozen, which he guards preciously. In giving them to me, he detailed their virtues, and explained fully the mode of application. On my return to Gabès, I spoke of this remedy to a very intelligent Arab ; he assured me that all that had been told me was very true ; that it was recorded in their books on medicine, in which one reads that the *Dernona* (the insect) cures hydrophobia when administered within 20 days of the bite : that it should be given to the patient in a portion the size of a grain of wheat in a morsel of food. This insect has very powerful vesicant properties, according to the Arabs, and it would be dangerous to increase the dose. The Arabs are unanimous in affirming that the remedy is effectual, but it acts only during the first 18 or 20 days. It appears, also, beyond doubt, that it occasions dreadful colics, so that, being a remedy of extreme violence, it should only be administered with the greatest prudence."

M. Reiche says that the *Coleoptera* belong to *Meloë tuccius*, Rossi, and *Mylabris tenebrosa*, Castelnau, extremely vesicant species ; and he remarks that the employment of *Meloë* in this way has been long known. He thinks that too much publicity could not be given to the notice in order to induce medical men to try the supposed remedy for this frightful disease.

[Without expressing any opinion as to the value of this supposed remedy, we would remark that the belief in it by the Arabs of the present day is evidently only the remnant of a faith at one time far more general. Hagen's "Bibliotheca Entomologica" contains about 15 references to works (mostly published in the last century), in which *Meloë*, *Cantharis*, and especially *Melolontha*, are credited with curative powers in this disease. Or more probably the word "preventive" would be better than "curative." The "intelligent Arab's" statement does not appear to us to show that the "remedy" has any effect when the disease has manifested itself ; and it is always open to the incredulous to say that no virus had been received into the blood (and hence the disease not incubating), in those cases where no ill effects followed a bite, if the "remedy" had been administered within the stated time. We observe in the *Bullettino* of the Italian Entomological Society, just received, viii, pp. 229—233, a letter from Dr. Sonsino to Professor Targioni Tozzetti, on *Mylabris fulgorita*, Reche., used in Egypt as a preventive for hydrophobia. In this, various references are given to medical works bearing on the subject.—EDS.]

*The Doubleday Collection.*—As many of the readers of the *Entomologists' Magazine* are aware the hours for visiting the Collection have been from 10 a.m. till 5 p.m., I beg to forward for publication the following letter.—D. PRATT, *Secretary*, East London Entomological Society, 333, Mile End Road, E. *South Kensington Museum, London, S.W.*: 1st day of November, 1876: *Bethnal Green Branch Museum.*—Sir,—In compliance with the wish expressed by the Members of the East London Entomological Society in the letter received from you to-day, I beg to acquaint you that arrangements have been made for the Doubleday Collection at



the Bethnal Green Branch Museum, to be open for inspection until 9.30 p.m. on Tuesdays. I am, Sir, your obedient Servant, P. CUNLIFFE OWEN, *Director S. K. M.* To D. PRATT, Esq., 333, Mile End Road, E.

## Review.

THE BUTTERFLIES OF NORTH AMERICA, with coloured drawings and descriptions; by W. H. EDWARDS. Second Series, parts iv and v; New York, Hurd and Houghton, 1875, 1876. 4to.

These two parts fully sustain the reputation of Mr. Edwards' magnificent work. Part iv is occupied by three species of *Argynnis*, one of *Melitæa* and its transformations, two of *Grapta*, and *Papilio brevicauda*, which latter appears to be quite distinct from *Asterias*, differing not only in the short tails, &c., of the imago, but also considerably in the larva. Part v comprises *Colias Philodice* and its transformations and variations, occupying no less than fifteen figures, some of the varieties, especially a melanic ♂, being very curious and interesting; three species of *Argynnis*, and *Apatura Clyton*, varieties *ocellata* and *Proserpina*, with full illustrations of transformations.

As usual, the engraving and colouring, and the minute care shewn in investigating the history of each species, leave nothing to be desired, and, considering the heavy expense the production of such a work must entail, we hope the author may receive such encouragement as will enable him to continue it beyond the second series.

---

ENTOMOLOGICAL SOCIETY OF LONDON: 1st November, 1876.—PROF. WESTWOOD, M.A., F.L.S., President, in the Chair. Professor Katter, of Putbus, Island of Rügen, was elected a Foreign Member.

Mr. F. Smith exhibited thorns of an *Acacia* from Natal, inhabited by a species of ant (*Pseudomyrma*) of the family *Cryptocerida*. These thorns were several inches in length, and the nests of the ant were formed in the hollow interior.

Professor Westwood exhibited larvæ of *Lasiocampa rubi* from Deal, found feeding on *Hippophae rhamnoides*; the finder stating that he had suffered much irritation from the hairs of the larvæ entering the skin. He also exhibited a very curious Coleopterous larva from Zanzibar, about half an inch in length, oval and flattened, steel-blue in colour, and furnished with singular clavate antennæ. Likewise a specimen of *Hesperia Sylvanus*, to the haustellum of which were attached several pollen-masses of an Orchid. Furthermore, he exhibited the pseudo-bulb of an Orchid from Ecuador, received by Mr. Hewitson, the interior of which was hollowed out, and in it were found no less than six species of cockroaches of large size, including *Blatta orientalis*, *americana*, *madera*, *cinerea*, and two undetermined. He called attention to an exhibition of noxious and useful insects recently held in Paris.

Mr. Champion exhibited a singular Hemipterous insect (*Mustha spinosula*) from Besika Bay, sent by Mr. J. J. Walker.

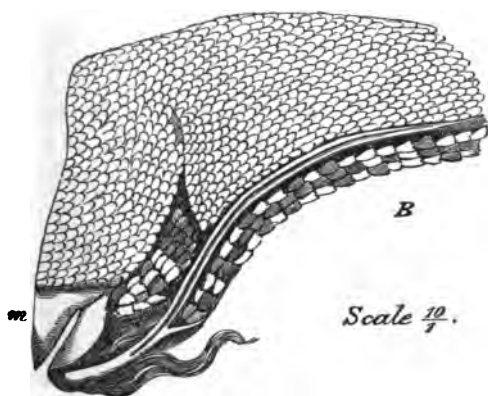
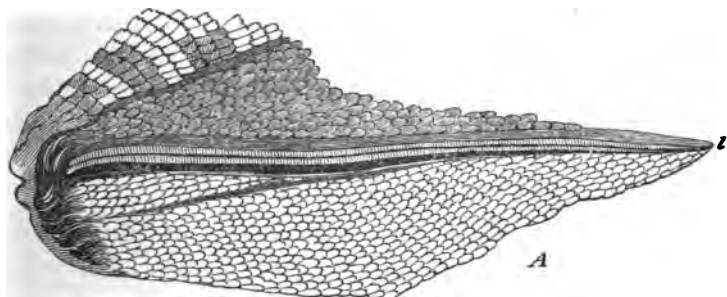
Mr. Dunning communicated supplementary notes on the genus *Acentropus*, chiefly from the researches of Mr. Ritsema. The latter (who had bred apterous females) was inclined to consider there were two good species, but Mr. Dunning said that the arguments used had failed to convince him of this.

Part iii of the "Transactions" for 1876 was on the table.

ON STRIDULATION IN THE GENUS *VANESSA*.

BY A. H. SWINTON.

The earliest record (with which I am acquainted) of stridulation in this genus of butterflies will be found in the Transactions of the Entomological Society of London, new series, 1852, vol. ii, Proceedings, p. xcvi, where the Rev. Joseph Greene informs us, that on the 8th December, when out on one of his autumnal diggings for pupæ in Buckinghamshire, he came to a beech tree on a high bank, the roots

Scale  $\frac{10}{7}$ .

A. Basal portion of fore-wing of *Vanessa Io*; showing lima (♂) or anal vein beneath.

B. Basal portion of hind-wing; showing costal vein on which the lima works. m is a transparent patch to impress (probably) the vibrations so produced on the air.

of which formed an arch about a foot in height, and faced the north, the opening being quite exposed to rain, snow, &c.; and, as he was on the point of inserting a trowel into the cavity, he heard a faint hissing noise, and to his surprise he found that, in searching for heterocerous pupæ, he had startled a colony of Peacock-butterflies

(*V. Io*) wintering there with shut wings. He tells us:—"Two were attached to the concave part of the arch, the third was on the ground, and the noise I heard proceeded from it;" and adds: "the noise resembled that made by blowing slowly, with moderate force, through the closed teeth; and while making it, the wings of the butterfly were slowly *depressed and elevated*." Apparently doubting the evidence of his senses, Mr. Greene pushed off another of these insects, "which immediately commenced the same movement of the wings, accompanied by a similar noise." That it was the testy temperament of the performers that thus sought vent, as spoilt children cry when awaking from sleep, he next afforded an ingenious proof. Pointing the trowel at one of the performers that had expended its spite, and closed its wings again to slumber, he saw it immediately turn towards it, and recommence the noise and motion with renewed vigour; and he noted that whenever this experiment was repeated, the same querulous manifestation ensued.

The next record of this strange phenomenon on the part of this butterfly, for which I have adopted the term "stridulation," in conformity with the accepted nomenclature when speaking of similar manifestations of the stimuli of the passions, in *Orthoptera*, *Coleoptera*, and *Hymenoptera*, (may I add *Hemiptera*, and *Diptera*?); will be found also shortly after in the same publication. Mr. Hewitson, whose collection of, and taste for, butterflies is well known to naturalists, writing on the 28th of January upon the conduct of a Peacock-butterfly that had been hibernating since the first hoar frosts,—we presume on the ceiling or wall of his sitting-room at Weybridge,—says (Trans. Ent. Soc., new series, vol. iv, Proc. p. ii, 1856): "They had been cleaning my room and had driven it from its winter quarters. I had handled it rather roughly, which it resented by *spreading out its wings horizontally to their fullest extent, and rubbing them rapidly together*, it produced a distinct sound, like *the friction of sand-paper*. This it continued to repeat for some time, and seemed greatly exasperated."

I will now relate as corollary my own late observations of a kindred manifestation on the part of the sole *Vanessa* that thrives beyond the Cheviots, and will then proceed to describe the exact method in which each of these insects produces its stridor, and to consider its import and place among similar manifestations in Insecta, to the right interpretation of which I have spared neither time nor attention.

It may be conjectured that beneath pure Italian skies the portion of the year passed by the *Vanessidæ* in hibernation would be brief; but in more northern countries the few species that gladden the landscape shrink from encountering the first visits of the benumbing airs of winter. I took advantage of a singular opportunity thus afforded, during a sojourn in the Highlands, to investigate the capability of *V. urticae* for stridulation. On the 22nd of August, a dull day, when there had been a sudden fall in the temperature, a fresh brood of the Tortoiseshell-butterflies, newly sunning themselves at West Loch Tarbert, hastened from the fields to shelter and remain torpid, perchance to dream. I detached one of these, a female, hanging on cobwebs in an outhouse, and seated her, still drowsy, on the palm of my hand. Then with the other hand, touching lightly the tails of the hind-wings, I induced her to depress and shut the wings successively. Each time she testily performed this action I heard distinctly, as the fore-wings were brought forward, *when only the extreme basal portion of the wings were in contact, a soft sound, like grating sand-paper.*

In *V. urticae* then certainly, and in *V. Io* more than probably, it will be noticed, the sound produced by the vexed insect must have arisen from the friction of some hard parts at the basal portion of the wings; and if so, it had long struck me the analogy of the stridulation of the leaf-crickets would point to the possession of some chitinous serrature or file, situated on one of the veins, which would also account for the stridor having so distinct a sound-colour of sand-paper. Prepossessed with this idea, I submitted specimens of the wings of *V. urticae* and of *V. Io*, male and female, to an excellent microscope of several working degrees of power that I had borrowed expressly for the purpose, and I then found, whenever the under surface of a fore-wing of either insect was focussed and adjusted, the required file or serrature (lima) came at once to view, situated on the anal vein at its base, and running along it for one-third of its length, for which distance it is tumid, spindle-shaped, and bare of scales. In the case of *Io*, and I believe also of *urticae*, it was much more strongly developed in the female than the male, and the vein had a blacker, firmer consistence. In structure, this lima did not much differ from that which we find in a musical cricket or leaf-cricket (formed, as I have reason to believe, by an unusual development, which metamorphoses the various parts of the wing and protrudes the spiral thread that surrounds the hollow wing-veins as well as the tracheæ), but the teeth were somewhat less regular.

The vein that clasps this notched or filed one when the wings are rubbed together is not difficult to find in the costal vein of the hind-wing, recognisable by a bare raised surface, curved outwards, with a smooth bevel above where it comes in contact with this filed vein; but it likewise only presents this character at the base, for if we trace it outwards, we soon notice its upper surface to sink in a series of sharp notches beneath the feathery scales; the tasteful chequering, notching, and glossy colours of which serve to throw the bare veins bearing the parts of the instrument of music into relief. But this is not all: in each of these butterflies there is an organization which I would compare to the mirror of the males of the leaf-crickets in structure and object; for we find at the fore side of the costal vein the wing-membrane is bare in a little circular patch which is embossed, a provision, I conclude, to impress the musical tremours arising from the friction of the filed vein on the air.

Lastly, I think we may strictly infer, from the experiment of the Rev. J. Greene and the *séance* vouchsafed to myself, that the object of this stridulation in *Vanessa Io* and *urtica* may be classed with those phenomena of rivalry and love so conspicuous in the *Orthoptera* and large *Hemiptera*, but of an intensity of expression marking a degree of intelligence little superior to that manifested in this direction by stridulating beetles, in which it has been most often alluded to under the epithet of fear. Yet I must here observe, *V. Io* will also utter this sound when disturbed in sunning itself, and I have reason to think also when the male and female are coquetting in air. And here it is singular that the development of the file allows the female to take precedence of the ardent male, the reverse being the rule in musical insects generally.

In conclusion, I may mention that I have by me careful drawings of the musical organization in each of the insects specified; one of these (*antèa*, p. 169) showing its appearance in the female *Io* beneath a strong microscopic power, is an illustration of a very perfect development of an insect-file in the *Lepidoptera-Rhopalocera*, or butterflies. It will scarcely be necessary to add that the stridulation of *V. urtica* is improperly noticed in Hagen's *Bibliotheca Entomologica*, ii, p. 477, and that the reference there should be to *V. Io*.

Calais: October 14th, 1876.

NOTES ON BRITISH *TENTHREDINIDÆ* AND *CYNIPIDÆ*.

BY P. CAMERON.

Having this year had an opportunity of examining the *Tenthredinidæ* in Stephens' Collection, I give here a few of the most important notes which I made on the specimens. It would serve no useful purpose to mention all the misnamed species which I noticed, as in many cases four or five species, belonging to nearly as many different genera, are under one name, and frequently these bear no resemblance to the description of the species they are supposed to represent.

*Hylotoma Leachi*, Ill. Mand. vii, p. 17 = *ustulata*. *H. anglica*, p. 16 = *berberidis*.

*Lophyrus pallidus*, p. 21 =, I believe, *rufus*. *Pallidus* must, therefore, be deleted from our lists, as I know of no British specimens.

*Pristophora varipes*, p. 27 = *Cladius padi* and *C. difformis*. *P. atra*, p. 26 = *C. padi*. *P. duplex*, p. 26 = 1 *Nematus conductus*, Ruthe, and 1 *N. obductus*, H. *P. rufipes*, p. 26 = apparently *N. compressicornis*, Fab. (= ? *alnivorus*, Cam.), or a large specimen of *N. fulvipes*, Fall. *P. testaceicornis*, p. 26 = *ruficornis*, Ol. *P. pallipes*, p. 25 = *N. appendiculatus*, H. *P. testacea*, p. 25 = 1 *N. pallidiventris*, Fall., and 1 *N. ribesii*, Scop.

*Euura cynips* (of the collection, but whether of Newman is another matter) = 3 *N. Vallisnieri* and *Euura gallæ*. *E. gallæ* = ? a new species.

Black, shining: mouth, tegulæ, feet, and pronotum white: head a little testaceous behind the eyes: femora nearly all black, with a pale band on the under-side of posterior: posterior tarsi and apex of tibiæ broadly black: posterior tarsi nearly longer than tibiæ: antennæ nearly as long as the body, thin, 3rd and 4th joints equal: cenchri large, dull white: cerci long, slender, pale, pointing outwardly: terebra long, hairy, projecting: area pentagona very distinct: wings hyaline: stigma white, fuscous at base: 3rd sub-marginal cellule nearly square: 1st sub-marginal nervure distinct.

Comes near *N. dolichurus*, Th., but the coxæ and trochanters are pale, and the apex of the tibiæ and posterior tarsi are black. The antennæ are longer and thinner than in *N. cinerea*, the area pentagona much more distinct, the band on the pronotum more conspicuous, and at the same time shorter and thicker.

Should this species prove (as I suspect it will) to be undescribed, I propose for it the name of *Nematus anglicus*.

*Nematus bicolor*, p. 27 = *Dineura stilata*. *N. gallicola*, p. 36 = *N. Vallisnieri* and a *Cryptocampus*. *N. proximus*, p. 36 = 1

*N. ruficornis*, 3 *N. conductus*, and a ♂ of a doubtful species. *N. intercus*, p. 36 = apparently a form of *N. appendiculatus*, or a species allied thereto. The first sub-marginal nervure is a little visible, and the posterior tarsi and apex of tibiae black. *N. pallipes*, p. 27 = *N. appendiculatus*. *N. niger*, p. 37 = *ruficornis*. *N. melano-stigma*, p. 35 = *Cladius difformis*. *N. ribesii* = *Dineura stilata* (mostly). *N. apicalis*, p. 31 = *D. stilata*. *N. bipartitus*, p. 32 = *N. myosotidis*. *N. 3-maculatus*, p. 31 = *N. ribesii*. *N. dimidiatus*, p. 29 = *melanocephala*, H. (*salicis*, Thoms.) *N. dorsalis*, p. 29 = *N. fulvus*, H., and 1 *N. bilineata* (*vide infra*). *N. melanopsis*, p. 29 = *N. dorsatus*, Cam. (Ent. Mo. Mag. xii, 129). The description of *melanopsis* given by St. Fargeau is not specific enough to warrant the sinking of my name: it will apply to more than one species. *N. flavescens*, p. 29 = *N. testaceus*, H. *N. testaceus*, p. 29 = an immaculate specimen of *N. fulvus*, H. *N. vittatus*, p. 34 = mostly *N. miliaris*, Pz. (*viridis*, H.) *N. capreae*, p. 33 = *N. miliaris*. *N. tæniatus*, p. 34 = (I think) *N. pallipes*, Fall., and *capreae*, Pz. (Kirby, Th.) *N. hæmorrhoidalis*, p. 35 = *capreae*, Pz. *N. analis*, p. 35 = a ♂ of a doubtful species. *N. fumipennis*, p. 35 = *N. abdominalis*, Pz. (*ventralis*, H.). *N. fuscipennis*, p. 31 = *abdominalis*. *N. Suessionensis*, p. 35 = *N. miliaris*. *N. fallax*, p. 34 = *N. capreae*. *N. affinis*, p. 31 = *capreae*. *N. oblitus*, p. 31, I could not determine. *N. interruptus*, p. 33 = *myosotidis*. *N. melano-sternus*, p. 33 = (I think) *N. fallax*, Lep. (*striatus*, H.) *N. gonymelas*, p. 34 = *N. miliaris*. *N. nigricornis*, p. 37 = *N. miniatus*, H. *N. cinctus*, p. 37 = *N. lucidus*, Pz.

*Athalia annulata*, p. 44 = *A. rosæ*. I have never seen a British specimen of *annulata*. Has anyone else?

*Selandria fulvicollis*, p. 47 = *Blennocampa melanocephala*. *S. Spinolæ*, p. 46 = *hyalina*, Kl. *S. melanocephala*, p. 78 = *Hoplocampa pectoralis*, Th. *S. funerea*, p. 50, is wrong. *S. versicolor* (Newman) is apparently *B. hyalina*. *S. alternipes*, p. 52, is wrong. *S. uncta*, p. 54 = *Taxonus glabratus*. *S. tenuicornis*, p. 53 = a species I have in my collection under the name of *alchemillæ*. *S. lineolata*, p. 53 = a *Pæcilosoma*. The true *lineolata* has been bred by Mr. J. E. Fletcher of Worcester, so it may be added to our lists. *S. scapularis*, p. 46 = 1 *Dineura stilata*, and 1 *D. testaceipes*.

*Hoplocampa plagiata* and *fulvicornis*, p. 38, are wrong. *Plagiata* I think has been taken by the Rev. T. A. Marshall. *H. brevis*, p. 47, is represented by a small species of *Nematus*. It may be here mentioned that *H. chrysorrhæa* is British.

*Eriocampa consorta, trista*, and *picea* (MS. names) = *E. æthiops*, Fab., sec. Cam.

*Allantus rufipes*, p. 72 = *Taxonus glabratus*.

*Emphytus immersus*, p. 92 = ♂ of *Pæcilosoma obtusum*. *E. gilvipes*, p. 73 = *E. grossulariæ*. *E. didymus*, p. 90 = *E. melanarius*. *E. nigricans*, p. 83, *cingulatus*, p. 89, *cereus*, p. 92, and *E. perla*, p. 89, are not in the collection; and, with the exception of *perla* (which I have taken at Rannoch), I have seen no British specimens, nor am I aware of any other record of their occurrence in this country.

*Lyda stigma*, p. 97, and *fumipennis*, p. 98 = *L. sylvatica*. *L. marginata*, p. 98 = *L. pratensis*. *L. fasciata*, p. 102 = *clypeata*. *L. fallax*, p. 99 = *L. hortorum*. *L. arbustorum*, p. 100 = *L. hortorum*. *L. cingulata*, p. 100 = *L. hortorum*. *L. flaviventris*, p. 101 = *L. depressa*. *L. varia*, p. 99, *lutescens*, p. 102, and *aurita*, p. 101, are not in the collection, and must be erased from our lists if native specimens are not forthcoming.

"*Melicerta ochroleucus*," Ill., pp. 94 and 95, is a puzzle. It is represented in Stephens' collection by *Strongylogaster eborinus*, with which his specific description agrees, but not the generic one, i. e., the clypeus is stated to be not emarginated, the 3rd antennal joint to be as long again as the 4th, the wings shortish, with only three sub-marginal cellules, the 2nd of which receives two recurrent nervures; and as the 1st cellule receives one also, this gives three recurrent nervures in all; and again, the 1st marginal cellule is stated to be small, so that it is clear that this description cannot have been taken from *eborinus*, unless from a remarkably aberrant specimen, differing in form of the clypeus, antennæ and wings from the ordinary form.

*Hemichroa alni*.—I captured a specimen of the ♂ of this species in Dunham Park, near Bowdon, in June last. It differs considerably from the other sex; it has no red on the head and thorax, the antennæ are testaceous, and the feet reddish-yellow. The ♂ is very rare in comparison with the ♀; but the ♂ of *H. rufa* seems to be much rarer; indeed, it is not, so far as I am aware, known at all, although the females are common enough, and have often been bred.

*Dineura stilata*.—The larvæ of this species have been very abundant during the present autumn, on the hawthorn hedges around Glasgow. They feed quite exposed on the face of the leaves, eating the upper epidermis: they are very sluggish, rarely moving even when



touched, and have a very powerful and nasty odour, somewhat resembling that given out by certain *Hemiptera*. Along some of the road-sides, I noticed that some of the hedges had quite a withered look, to such an extent had the leaves been devoured. The larvæ are found as late as the end of October.

Another destructive larva this year has been *Nematus pavidus*, Lep., = *Wittewaalli*, Voll. In several localities I noticed willows (generally *Salix caprea*) nearly denuded of their leaves by the voracious larvæ of this species. Like the larvæ of *D. stilata* they have a powerful odour and feed quite exposed, flinging the body in all directions whenever anything approaches. *N. miliaris*, Pz. (*viridis*, H.), is likewise frequently injurious to willows, but I have never seen it make such a clean sweep of the leaves as *N. pavidus*. The larvæ of *Lophyrus pini* have been unusually abundant here this autumn. I observed one small fir with many hundred larvæ on it.

*Cræsus latipes*, Vill. (see Ent. Mo. Mag. xii, 228).—Mr. J. E. Fletcher, of Worcester, has fortunately succeeded in breeding this species, and I have also bred it from larvæ sent to me by that gentleman, so that now there can be no hesitation in adding this insect to our lists. *Latipes* may be known from *septentrionalis* by its smaller size, the smaller clouded band in the anterior wings, the wings in *septentrionalis* being clouded from the stigma to the apex, whilst in *latipes* there is only a small cloud below the stigma, while again the posterior femora are reddish-brown underneath, these in *septentrionalis* being quite black on the under surface.

Our three species may be tabulated thus :

A.—Fore-wing more or less clouded.

Fore-wing distinctly clouded from stigma to apex ; femora black underneath. ♂ antennæ black ; apex of abdomen black.—*septentrionalis*.

Fore-wing with only a small faint cloud below the stigma, unclouded at apex ; posterior femora reddish beneath. ♂ antennæ brown beneath at the apex ; apex of abdomen entirely brownish-red.—*latipes*.

B.—Fore-wings unclouded.

Femora reddish above and beneath, black at apex.—*varus*.

*Nematus abbreviatus*, Hartig, Blatt- und Holz-wespen, 205.—In the collection of Dr. Sharp I find a specimen of this species, taken by him in Braemar. The larva feeds on the apple ; cf. Von Vollenhoven, Tijds. Ent., 2nd Ser. iii, 206, pl. 10.

*Nematus imperfectus*, Zaddach, Schr. Ges. Königsb. xvi, p. 80.—This recently described insect is British. It belongs to the *caprea* (= *Kirbyi*, Thoms.) group, and is very difficult to separate from *caprea*, although I dare say it is a good species.

*Nematus longiserra*, Thomson, Opusc. Ent. 632, 39; Hymen. Scand., i, 128, 55.—The only British specimens that I have seen of this insect are a ♀ and ♂ which I bred from larvæ found on *Salix caprea*, at Glenelg, in 1874; these larvæ having been collected in the belief that they were those of *N. histrio*, which I discovered on the same bushes two years before (see Ent. Mo. Mag., xi, 65). From this, it will follow that the larvæ of *longiserra* cannot differ much from those of *histrio*, or otherwise I should have noticed it, as I am well acquainted with the larvæ of the latter species; and it will be equally clear that *longiserra* cannot be the *Tenthredo nigrata*, Retz., a willow feeder, as Thomson seems to suggest. *Longiserra* is easily known from *histrio* by its having the last abdominal segment considerably lengthened above.

*Nematus bilineatus*, Klug.—From the remarks of Professor Zaddach in the above-quoted work, it appears that the supposed var. of *N. luteus*, with black marks on the thorax, which I described last year in this Magazine (xii, 130), is in reality *bilineatus*, which is a distinct species from *luteus*, as is proved by its having a different larva; though it is very like that of *luteus* in form and habits, yet being easily distinguished by the number of tubercles, &c. It is also stated by Zaddach that *N. Klugi*, Dbm., is not *bilineata* (which was described by Klug, Wiedemann's Zool. Mag., ii, 86); and in this case the name of *bilineata* must of course be retained.

The British species of the *luteus* group may be distinguished as follows:

A.—Head and thorax black; wings deeply infuscated.—*abdominalis*, Pz.

B.—Head and thorax for the greater part luteous.

a.—Abdomen broad at apex.

Mesonotum immaculate, stigma black at base, wings deeply smoky. ♂ mesonotum black.—*luteus*, L.

Mesonotum with two or three black marks, stigma scarcely black at base, wings slightly smoky, ♂ thorax luteous.—*bilineatus*, Kl.

b.—Abdomen narrowed at apex, stigma usually unicolorous, dorsum of abdomen with black bands, breast luteous.—*dorsatus*, Cam.

*Nematus pallescens*, Htg.—I have taken in Cadder Wilderness the undescribed ♂ of this species. It has the antennæ thicker and longer than in the ♀; the vertex is black; there are three black marks (nearly joined together) on the mesonotum; the metanotum is black; the scutellum at the edges is also marked with black; and there are broad black transverse marks across the back of the abdomen: the stigma is obscure testaceous.

*Nematus vesicator*, Bremi, = *helycinus*, Brischke.—I have bred this gall-maker from a large bladder-like gall of a green colour, which I found on a willow in Rannoch, during a visit of one day's duration which I made to that place last year, in order to procure some other insects. My specimens show considerable variation in the coloration of the abdomen, one example having it nearly all luteous, while in other specimens the belly only is of that colour, the rest being black. It has no relation, I believe, with the *N. helycinus*, Thoms.

*Nematus Westermanni*, Thomson, Opusc. Ent., 615, 3; Hymen. Scand., i, 87.—I captured four specimens (three ♀ one ♂) of what I take to be this species, last June, among osiers on the banks of the Severn below Gloucester. It is very like the above variable species, but is, I think, distinct from it.

*Cryptocampus angustus*, Inchbald (*nec* Htg.), Ent. Mo. Mag., i, 47; *C. mucronatus*, Vollenhoven (*nec* Htg.), Tijds. Ent. (2) vi, pl. 12 = *C. pentandræ*, Retz.—I have taken *pentandræ* in various parts of Scotland. It seems, however, to be local, and in some years is far more abundant than in others. I have seen several small willows with their twigs very much distorted by the galls, so numerous were they. Last spring I noticed, among a number of galls collected on the Kilpatrick Hills, a curious instance of how one animal can appropriate to its own use the work of another. From the galls I speak of, a good many of the flies had emerged (this was in March), and the empty cocoons had been utilized by a spider, which had filled them completely with her eggs, there being none, so far as I could see, in any other part of the gall. I am sure I counted upwards of a hundred cocoons filled with eggs; sometimes there would be several cocoons in a gall containing them, while in others there would be only one; and in every case I could not help admiring the neat way in which the eggs were packed in the cocoons. A few of the cocoons were also tenanted by a black species of *Aphis*, and from it I bred a couple of *Allotria minuta*, Htg.

(To be concluded in our next).

---

#### DESCRIPTIONS OF TWO NEW BUTTERFLIES FROM THE PHILIPPINE ISLANDS.

BY W. C. HEWITSON, F.L.S.

#### ZETHERA THERMÆA.

*Upper-side*: male dark brown; both wings crossed below the middle by a band of white, commencing near the costal margin of the anterior wing by three separate white spots, followed by a fourth

white spot bordered with grey, and to the inner margin by a band of grey, marked by four white spots, broad on the posterior wing where it is bordered outwardly by grey, and sinuated in the form of arches; both wings crossed beyond the band by a series of linear grey spots in pairs, and a sub-marginal series of spots of the same colour.

*Under-side* as above, except that it is rufous-brown; that the spots in the band of the anterior wing are all separated; that the band of the posterior wing is divided by dark brown nervures, and that the two series of spots which follow it are much more distinctly marked.

Exp.,  $3\frac{1}{2}$  inch. *Hab.*: Philippines (Sama, Bohol, Paraon).

The kindness of Dr. Semper has enabled me to add to my collection the two valuable species now described.

#### MELANITIS BEZA.

*Upper-side*: female blue-black; both wings crossed near the outer margin by a series of oblong blue spots; both wings slightly dentated: the fringe of the posterior wing spotted with white.

*Under-side* rufous-brown; both wings crossed near the outer margin by a series of white spots, commencing on the posterior wing at the middle of the costal margin; anterior wing with a small white spot at the end of the cell outside; posterior wing with a similar spot near the base.

Exp.,  $3\frac{1}{2}$  inch. *Hab.*: Philippines (Mindanao).

Most nearly allied to *M. Patna*, but very distinct.

Oatlands, Weybridge: November, 1876.

#### LOCUSTS IN YORKSHIRE.

BY W. DENISON ROEBUCK, SECRETARY OF THE LEEDS NATURALISTS' CLUB.

During the past season, a number of locusts have been taken in various parts of this county. I give the occurrences in order of time so far as it can be done.

1. The first example is one taken by Mr. B. Bagshawe in High Street, Sheffield, July 5th. (*Sheffield Daily Telegraph*, July 6th). This I have not seen.

2. Seven weeks elapsed before the next specimens occurred. On August 22nd, one was taken near Laisterdyke Station, Bradford.

3. August 27th, one in a field at Buttershaw, between Bradford and Halifax, which I have not seen.

4. One about the same time at Armley Green, near Leeds, is in the collection of the Leeds Philosophical and Literary Society.

5. One about the same time was taken at Beeston Hill, Leeds.

6. One about the same time in Westgate, Huddersfield, now in the local collection of the Huddersfield Naturalists' Society.

7. Another about the same time was taken in the prison yard at Wakefield, is the property of Mr. William Talbot, and is the largest specimen of the series.

8. On the 1st September, one was captured in a field at Acaster Malbis, on the Ouse below York, perched upon a sheaf of corn. This I have not seen.

9. Another specimen taken at Wakefield; date not known. Reported to me by Mr. William Talbot.

10. One was taken at Hyde Park, Leeds, and shown to me, but the date is not known.

11. Finally, the latest in date is an example which flew on a lady's dress, in Spring Street, Huddersfield.

I have thus had reports of eleven specimens taken in this county, seven of which (those numbered 2, 4, 5, 6, 7, 10 and 11) I have had under my own examination. Four of the specimens (numbered 4, 6, 7 and 11) have been placed in the hands of Mr. McLachlan, to whom I am much indebted for determining the species, which he makes out to be *Pachytylus cinerascens*.\*

It is somewhat noteworthy that concurrently with this Yorkshire visitation, only two examples have hitherto been recorded out of the county, namely, the one recorded in the Ent. Mo. Mag. for November, and one taken at Wells, Somerset, as recorded in "Science Gossip" for December.

It would be interesting to place on record any additional specimens that have occurred, in order to justify conjecture as to the line of migration. Can it be, as the remarkable preponderance of Yorkshire examples would seem to indicate, that such line of migration was from the northern parts of Central Europe, by way of the German Ocean and the Yorkshire Coast, and that the few southern specimens were stragglers from the north? I should be glad to see or receive additional records, and intend to contribute a paper on the subject to the "Naturalist" (published at Huddersfield) should additional facts come to light.

9, Sunny Bank Terrace, Leeds :

December 2nd, 1876.

---

*Locusts in Yorkshire.*—By way of supplement to the above note, I may say, that I have heard of another Yorkshire specimen, which was taken on the 6th of September "enjoying the beauties of Nature" in the cemetery at Scarborough (Scarb. Daily Post, Thursday, Sept. 7th, 1876). I have not seen this example.—  
Id. : December 14th, 1876.

---

\* It is generally acknowledged by Orthopterists that there are two species confused under the name of *Pachytylus migratorius*, one of which should bear the familiar name, and the other that of *P. cinerascens* (Fab.). As I understand these species at this moment, the visitors to Yorkshire are the latter. There exists an idea that this breeds annually in certain parts of Northern Europe (e. g., Belgium), whereas the former only appears occasionally.—R. McLACHLAN.

*The insects of the Arctic Expedition.*—Having been favoured with an opportunity of glancing over a portion of the collections made by Captain Feilden, one of the naturalists who accompanied the expedition, I jotted down a few notes that cannot, I think, fail to be interesting to entomologists generally, and which I have Captain Feilden's permission to publish. A large portion of the collections is still unpacked. That seen by me consists of a box of pinned insects, and a considerable number in tubes, and is probably the most interesting because the greater number of the insects were collected near Discovery Bay in  $81^{\circ} 42'$ , N. latitude; some of the *Lepidoptera* are even from  $82^{\circ} 45'$ . Of course, the most interesting fact is the occurrence of five or six species of Butterflies within a few hundred miles of the North Pole, especially when taken into consideration with the fact that Iceland and the large islands of the Spitzbergen group, although in lower latitudes, have apparently no butterflies.

In *Lepidoptera*, I observed four examples (2 ♂, 2 ♀) of the genus *Colias*, possibly two species (? *Boothii* and *Hecla*). Apparently three species of *Argynnis* or *Melitæa* (or both). A *Chrysophanus* apparently identical with *phlæas*. In the *Noctuidæ*, only one individual,—an *Acronycta*. In the *Geometridæ*, one *Amphidasis* or *Biston*, and several Cheimatobioid forms with apterous females. Of the *Crambites*, one *Phycis*, perhaps our *fusca*.

The *Hymenoptera* are represented by a *Bombus*, and one of the *Ichneumonidæ* of considerable size.

In the *Diptera*, there is one large fly, probably belonging to the *Tachinidæ*, and perhaps parasitic on the larvæ of some of the *Lepidoptera*. One species of *Tipulidæ*; and a considerable number of *Culicidæ*, and of what looks like a *Simulium*, which, however, do not appear to have annoyed the members of the expedition in these high latitudes.

Of *Coleoptera*, *Hemiptera*, and *Neuroptera*, I saw none; but the bird-lice are naturally well represented.

No doubt we shall hereafter have an extended report on all the Natural History collections, which, thanks to Captain Feilden's diligence under peculiarly trying conditions, will be the most valuable contribution to a knowledge of the Arctic Fauna and Flora that has yet been (or, perhaps, ever will be) furnished.—R. McLACHLAN, Lewisham, London: 6th December, 1876.

*Note on Bruchus pisi.*—As this insect is generally (if not always) found in England in shops or store-houses, it may not be uninteresting to note that I beat a specimen of it last August off *Sisymbrium* near Stretford, on the canal bank. This is a district, however, where there are many market gardens, and much of various kinds of garden and field produce is brought by boat through it to Manchester.—J. CHAPPELL, 2, Boundary Street, Hulme, Manchester: December, 1876.

*The Colorado Beetle (Doryphora decemlineata).*—The Commissioners of Customs have issued to all the ports of the United Kingdom a General Order, accompanied by a description and figure of the Colorado Beetle, directing that the Officers of the Out-Door Department of the Service, in addition to the orders given in 1875, respecting the particular examination of potatoes brought from the United States and Canada, with a view to prevent the introduction of the beetles into this country,

are, "especially during the months of August and September, to look for and destroy "any beetle answering the description given, which they might find on board vessels, "or on wharves, quays, sheds, or packages landed from vessels, and they are to "encourage other persons to do the same."

That this is a step in the right direction, and not taken without reasonable apprehension of the importation of the beetles that have proved extensively destructive to the potato-crops in America, is evident, from the following extract from a letter from Colonel Mason C. Weld, a well-known American agriculturist, which has recently appeared in the "Agricultural Gazette:"—"We are indebted to the "Old World for much that we are or ought to be thankful for, and for evils in the "shape of weeds almost without number. I heartily hope we may never repay that "debt. Nevertheless, we are about to make a small return in the shape of the "Colorado potato beetle. I have no doubt whatever that you will have them in "abundance within two or three years. Every ship which sails during the summer "months from our entire Atlantic coast is liable to carry out living ones. When "the wind blows favourably, that is, directly towards New York from either of the "great potato-regions in the vicinity, the beetles are found abundantly in the streets; "of course, they are liable to get upon the ships, to be stowed with the cargo, and to "be unloaded alive and well at your ports. They certainly will live long enough "without food to cross the Atlantic; whether they will be active enough to lay their "eggs after the fatigues of the voyage is another question. I have had them in "close-stoppered phials upon my table for several weeks, and found them lively at "the end of that time. So much for your consolation." The immigration of these beetles thus seems certain; it is a moot-point whether they will live in Britain, for, as Col. Weld goes on to say, "as the creatures do not seem to enjoy life in wet "weather, they may be so discouraged by your moist climate and grey skies, that "that they will not thrive in England. Who knows?" If they do effect a settlement, it appears that hand-picking of the perfect insects off the growing potatoes, and watering the plants with "Paris Green," in solution, when they are attacked by the larvæ, are the most effectual preventive means yet discovered. Mr. Weld finishes by saying:—"The beetles do not depend upon being hidden in a barrel "of potatoes in order to reach your shores alive, and if they did, every ship that "sails from one of our Atlantic ports offers them the opportunity in the ship's "stores."—J. W. DOUGLAS, *Lee: 9th December, 1876.*

[The following observations, bearing on the improbability of the importation of this beetle, appeared in "The Field" of 18th November last, appended to a reprint of the notice above referred to:—"The common-sense precautions suggested in the "above memorandum are especially applicable to the Canadian dominions, which, "however different in temperature and physical conditions from the original home of "the beetle, are still on the same continent, and capable of being attacked by it in "the course of years, during which successive broods may become acclimatised "on the way. But it may not be out of place (and without in the least degree "suggesting an avoidance of the safeguards above mentioned) to allay the fears of "English agriculturists by pointing out: (1) That not a single American injurious "insect has ever obtained a footing here, although many European insect-plagues "have thriven only too well on the American continent. (2) That the protracted

"wet of north-western Europe, added to the absence of excessive summer heat, is quite opposed to the conditions necessary for the welfare of the beetle. (3) That the group of *Chrysomela* to which it belongs is naturally of a very circumscribed area in its native land; and (4) That the danger is here diminished, by one-half at least, since (it being tolerably certain now that neither eggs, larvæ, nor pupæ are likely to be imported) of such individual specimens of the perfect insect as may be transported here in ships, the only possible vehicle, it is only gravid females that can be of any harm. The fortuitous conjunction of a pair of the beetles in this country is altogether improbable; and it is, moreover, very unlikely that an impregnated female, ready to deposit ova, would act so contrary to instinct as to select a ship for that purpose, or retain the eggs during the whole passage.

"It may also be observed that in Colorado itself, according to Mr. Riley's report, the damages by the beetles are now so much reduced as to be scarcely worth recording."

To the arguments therein adduced may be added, that proper food for the young larvæ is scarcely to be found near quays and docks, even supposing an impregnated gravid female survived the passage without laying her eggs on ship-board.—E. C. R.]

*Pyrameis Huntera* in England.—I have just had the pleasure of setting out a very fine and perfect specimen of *Pyrameis Huntera*, which was taken about the 30th of August in Goss Lane, Christchurch, Hants, by the youngest son of S. Evans, Esq., of Eton College, who has just begun to make a collection. There can be no doubt about the freshness of the specimen, which is still in perfect condition. Mr. Evans tells me that it was taken on a patch of Valerian in a lane where *P. cardui*, *C. Edusa* and *C. Hyale* abounded, some of which were taken at the same time, and are now in his son's collection.—A. VERNON JONES, Eton College: Dec. 8th, 1876.

[We have not seen this specimen, but see no reason to doubt the correctness of the identification. The species is figured in Wood's "Index Entomologicus," pl. 53, fig. 8, with the remark—"Said to be taken in Pembrokeshire by Captain Blomer." An example from South Devon was recorded in the "Entomologist" for 1876, p. 255.—Eds.]

*Note on the food plant of Pachnobia hyperborea (alpina, Westw.).*—I was very glad to see Mr. Meek's note on the food plant of the larva of this species, for I felt that the previous note (p. 109) extracted from Dr. Staudinger's work did not say all that had to be said on this point.

On 10th of last August, Mr. F. O. Wheeler sent me from Norwich two newly hatched larvæ, obtained from eggs laid by a female moth, which he and Mr. Richardson had captured at Rannoch; they reached me alive, though I could not see that they had tasted any of the leaves of various common plants and bushes which had been put in with them. I placed them in a glass-stoppered bottle, and supplied them with bits of everything I could at the instant procure, that might at all be supposed likely to suit their taste; amongst the rest, whortleberry (*Vaccinium myrtillus*), and two Saxifrages; had my plants of *Empetrum nigrum*, imported to feed former consignments from the north, still been alive, I should certainly have included their leaves also; but I was not so lucky. Various plants were nibbled, but



*Vaccinium myrtillus* was not touched, and seeing that *Saxifraga hypnoides* was more eaten than anything else, on August 29th I planted some of it in a flower-pot, and turned the larvæ (which had scarcely grown, though one had moulted since I had them) out upon it. I fear, however, that this substitute food, as it now proves, did not sustain them long, for I have never been able to see them, or any trace of their having been feeding, again.

I find I noted the young larvæ as being of a dingy olive-brown, and looking somewhat like an *Agrotis*, but not so translucent, with head and plate on second segment shining black, the usual warts distinct, black, and furnished each with a short stiff bristle. The one that moulted became of a warm dark velvety-brown, with paler lines.—JOHN HELLINS, Exeter: December 11th, 1876.

*Notes on Epunda lutulenta, and description of the larva.*—Mr. Porritt is correct in supposing his description of the larva of *E. lutulenta* to be unsatisfactory, as the principal character does not appear until the last moult has taken place.

The imago is tolerably common in this district, appearing in September, and is usually captured at sugar and ivy bloom. The ♀ lays over 100 ova, which hatch about four weeks after deposition, and the larvæ, when young, feed on grasses, and do not seem to restrict themselves to any particular species, at least in confinement.

At first they devour the cuticle only, both upper and under sides, leaving the central membrane untouched. After changing their first skin, they are bright pale uniform green, with a broad conspicuously white spiracular band. In repose, they rest with the anterior segments raised and arched like many *Geometra*, and at this stage are rather sensitive, dropping at once to the ground if disturbed.

My larvæ have been subjected to various conditions of temperature, but they always appeared perfectly hardy; and those kept indoors in a room with a fire did not materially outstrip in size those exposed to all the vicissitudes of the weather out of doors, where their cage was frequently buried beneath several inches of snow. A warm night, even in mid-winter, invariably brought them up to feed.

As the spring advanced, and the larvæ increased in size, they were not so particular in their diet, and I have observed them feeding (besides grasses) on plantain, *Matricaria*, marigold, chickweed, groundsel, dock, and the unexpanded flower buds of the blackthorn; the last named and dock are, however, their especial favourites. As the larva has been taken at large by my friend Mr. B. Bower feeding at night on the blackthorn buds, it is probable that they follow the habits of many *Noctua*, of which the genera *Tryphana*, *Aplecta*, and *Noctua* afford well-known examples.

In May they arrive at maturity, but before this period, the conspicuous white spiracular band has lost much of its brightness; this is, however, resumed after the last moult, when the violet characteristic edging is first distinctly visible.

I append a description, taken from a brood of over fifty individuals, among which I only noticed the variation recorded below:—

Rather elongate, cylindrical, velvety; head rounded; *bright apple-green*, minutely irrorated with grey; a grey dorsal shade, very frequently forming blackish dots at the incisions; sub-dorsal line whitish, distinct; *a broad yellowish or greenish-white spiracular band, its upper and lower margins pure white, the former edged with a violet line joining the white spiracles*; belly slightly paler than the ground colour; legs and prolegs tinged with purplish; head of the ground colour, hardly shining; mouth black.

A variety occurs with the white sub-dorsal lines represented by series of grey or dark ferruginous dashes. The reddish-brown pupa is enclosed in a brittle earthen cocoon below the surface. I believe the imago appears a few weeks earlier in Scotland, where it is not scarce in some localities.—C. FENN, Ashley House, Eltham Road, Lee: 11th December, 1876.

*Eupithecia minutata* and its variety *knautiata*.—During this and last season I made a few notes on the larvæ of these two forms. At the end of September in last year, Mr. Owen Wilson sent me a number of larvæ he had found on *Scabiosa succisa*, near Carmarthen, which he and I at once suspected were those of Gregson's so-called *knautiata*. They were much more variable than our form of *minutata*, and considerably larger. Different specimens were purplish-grey, grey, brown, and some almost black; whilst our ling-feeding form is nearly always pinkish, with a small sprinkling of grey ones. I found those from the scabious would feed equally well on ling, and also on ragwort; whilst our ling-feeding form fed equally well on ragwort. The imagos from the scabious-feeding larvæ were, so far as I could make out, in all respects the same as those from ling; and for my part, I am tolerably satisfied they are one and the same species.

The larger size of the scabious-feeding larvæ is sufficiently accounted for by the more succulent nature of the food; the hard dry nature of the ling seemingly has a tendency to dwarf the larvæ, whilst their colour arises no doubt from the ling flowers, which part of the plant alone they eat.—GEO. T. PORRITT, Highroyd House, Huddersfield: December 2nd, 1876.

*Description of the larva and habits of Lobophora viretata*.—On looking over the scanty records of this species for the last twenty years, I find nothing to show that it has more than one brood in the year, or more than one food-plant, viz., privet, for the larva. In the belief, therefore, that some further light on its history may be desirable, I have here put together the few facts, which within the last two seasons have become known to me, and which go to show that *viretata* must at least be partially double-brooded, the flights being in May or June and again in August, and that, as is generally seen in the case of double-brooded species, the *moths* of the first flight from hibernated pupæ are larger specimens than those of the second flight, and also that the larva is by no means confined to one food-plant.

On 12th July, 1875, I received from the Rev. Bernard Smith, three larvæ, which had been found by him each in a slight web amongst flower-buds of *Ligustrum vulgare*; they continued to feed three days longer, eating, as I observed, the interior of the flower-buds, portions of the leaves, and the rind of the flower-stalks; on the 17th, they were spun up; the moth appearing on 20th August. Mr. G. F. Mathew also informs me that at the end of last May, and through June, he was feeding up some *P. plumigera*, and that whilst providing them with fresh food, he occasionally noticed between united leaves at the ends of the sycamore twigs, some small geometers, but that taking them to be only *C. brumata* he threw away most of them; after the *plumigera* had gone to earth, he left the cage to itself—introducing no other larvæ,—but one day, about the middle of August, he looked into it to see all was right, when he was astonished to discover two perfect specimens of *viretata* evidently just out, and a day or two afterwards to find a third specimen, and thus became aware of the

identity of the little larvæ he had been previously throwing away : with both of us, therefore, *viretata* proved double-brooded in confinement ; that it is double-brooded also in nature I obtained evidence on the 8th September, 1875, when a friend, who was with me helping to search for larvæ of *L. Argiolus*, found a very different larva sitting in the midst of a small umbel of blossom-buds of *Hedera helix*, which was surrounded with a very thin and transparent open meshed web ; several of the buds were eaten out and a few grains of frass were clinging to part of the web. I felt a little puzzled for a few hours about this larva, which then had no marking, and was like the ivy-buds in colour when first found ; but a subsequent examination convinced me it was *viretata* ; it moulted on the 18th, and continued to feed well on ivy-buds until September 21st, when it burrowed into earth, and the moth, a fine male, appeared early on the morning and was flying round its cage in the afternoon of May 6th, 1876.

The full-grown larva is about half-an-inch in length, or a trifle more when stretched out, thick and stumpy in aspect, the head fitting partly within the second segment, which is smaller than the third and fourth, they being tumid both above and at the sides ; the last two segments a little taper to the end, which has two minute anal points ; all the segments plump, yet having two or three transverse wrinkles at each end, though not very noticeable till the larva is full-fed ; the minute tubercles warty ; when the larva is at rest, and often while feeding, the head is tucked under the thoracic segments which are arched above, and from them again the back is arched to the end of the tenth segment. Individual examples vary in details of colouring, though the ground colour is always some pale green or tint of greenish : in one variety, the head and thoracic segments are much suffused with pink, and on the fourth segment a lateral wedge-shaped transverse streak of darker pink extends from behind the legs upwards, from thence each segment to the ninth has on the middle of the back a broad trilobed mark of dark pink connected in the short intervals by a stout dorsal line of the same colour ; on the back of the tenth the pink marking is more rudimentary, and on the three posterior segments is little more than a dorsal and imperfect sub-dorsal stout line, which all merge together at the anal tip, along the pale greenish side is a faint and interrupted pinkish line, and on it the small tubercular warts are whitish, elsewhere they are the same colour as the surface whereon they happen to be, and so are not noticeable ; this is the case also with the spiracles.

A second variety has the ground colour very pale and slightly glaucous in its delicate tint, though strengthened a little in depth anteriorly ; the dorsal mark on the third and fourth segments is a line of purplish-pink which occurs again on the last four, while on each of the intermediate segments is a purplish-pink broad-arrow mark with its point close to the division in front, extending backwards about two-thirds of the length of the segment, the ground colour of the remaining third being rather paler than usual : these arrow heads are deepest in colour and rather suffused on the fifth and sixth segments, and each one following is more distinct and paler by degrees ; the sub-dorsal line is of the same pink colour, distinct and continuous throughout.

A third variety I found in the autumnal larva before mentioned, which, previous to its last moult on September 13th, was of precisely the same tint as the young ivy-buds amongst which it was found, and destitute of any markings ; but afterwards,

though it retained the same pale greyish-green ground colour, it became conspicuously marked with dark crimson on the head, more faintly on the second segment, where was a dorsal line of the ground colour, and large crimson blotches on the back of the fourth and fifth segments, in which dorsal and sub-dorsal lines could be seen of still darker crimson; a part of these blotches extended transversely down the side and round the belly on the junction of the fourth and fifth, and nearly so on the junction of the fifth and sixth; whilst towards the end of the sixth, seventh, and eighth segments on the dorsal division of each was a large and broad crimson, somewhat blunted, diamond-shaped blotch, edged behind with whitish; at the division of the ninth and tenth segments were three short and very fine crimson streaks on the dorsal and sub-dorsal regions; the eleventh without marking, the twelfth crimson with ground coloured dorsal and sub-dorsal lines, and the thirteenth crimson, the anal flap edged with ground colour, the front of the anal legs tinged with whitish which continued down them as a stripe dividing a dark crimson blotch, from which proceeded a small dash forwards on each side of the belly; the skin soft and velvety, the head only glossy.

The larva spins itself up in a cocoon about  $\frac{3}{4}$ -inch in length by  $\frac{1}{4}$ -inch in breadth, of a roundish oval figure, attached to a stone, a leaf of the food-plant, or other substance on the surface of the earth or a little below it, and composed exteriorly of grains of earth, and smoothly lined inside with silk.

The pupa is plump-looking, about  $\frac{1}{8}$ -inch in length, and nearly  $\frac{1}{4}$ -inch in diameter in the thickest part, namely, across the ends of the wing-covers, which are long in proportion and well developed, having the rays in slight relief; the thorax rounded near the head; the eye-covers prominent, the abdomen rough with fine punctured depressions except at the divisions, and tapering rather sharply towards the tip, which is furnished with several fine curved-topped bristles, the two central the longest: its colour a dark brownish olive-green on the back of the abdomen, with brown divisions, and a darker brown dorsal stripe becoming reddish near the tip; the wing-cases darkest between the rays, together with those of the antennæ and legs bright olive-green, eye-covers brown, the whole surface rather shining.—WILLIAM BUCKLER, Emsworth: October 23rd, 1876.

*Gelechia lutulentella* at Cheshunt.—At the beginning of August, amongst a number of moths taken by the signal-man at light at the Cheshunt Station, I found a good specimen of *Gelechia lutulentella*. There is one peculiarity about it that I believe has not been noticed before, viz., that it has a yellow patch on the upper-side of the abdomen like that on *G. populella*, but slightly smaller. This was obscured by grease when I showed the insect to Mr. Stainton; but I noticed it before setting it out, and it has again become visible now that the grease has been removed.—W. C. BOYD, Cheshunt: December 11th, 1876.

*Padisca rufimitrana*, H.-S., new to Britain.—Mr. F. J. H. Jenkinson, of Trinity College, Cambridge, has taken two specimens (1 ♂, 1 ♀) of this new species, both at light, in July of successive years, in Cambridge. One of these I sent to Mr. Barrett, suggesting that it was probably *rufimitrana*, H.-S.; he concurred, but kindly forwarded figures to Prof. Zeller, who was enabled to pronounce with certainty that

it was the true *rufimitrana*. As it is not described in any English work, I give a brief description. Having only these two rather dissimilar specimens to compare, greater accuracy of detail would be injudicious.

Size and shape of *Ratzeburgiana*: fore-wing of ♂ longer, and costa less arched, than in ♀. Head deep yellow-ochreous; thorax brown-grey, collar ochreous. Abdomen grey, in ♂ with a pale ochreous tuft. Fore-wing pale bluish-grey; basal patch composed of numerous dark grey-brown transverse strigæ, its outer edge forming a very dark, almost black, irregular fascia; in the ♀ specimen strongly angulated, in the ♂ almost straight and very oblique, but with a large externally-projecting tooth in the middle. Central fascia slender, very dark brown-grey, margins very irregular; running from middle of costa to anal angle. The pale space between basal patch and central fascia is irregularly striated with brown-grey, and indistinctly streaked with yellow, dilating into an indistinctly yellowish blotch on dorsal margin; it is bordered on each side by a faintly metallic line. Costa beyond central fascia with four pairs of whitish strigæ; from 2nd and 3rd pairs indistinctly metallic lines run to above anal angle; between them hind-margin indistinctly yellowish. Beneath apex an irregular dark brown spot. Hind-wing brown-grey; cilia paler grey, intersected by a strong dark line.

Although an obscure looking species, not very like any other; nearly allied to *Ratzeburgiana*, but easily distinguished by the different colour, and especially the yellow head, which separates it at once from all its British allies. It frequents fir trees, and appears to be rather local, but not uncommon, in Germany.—E. MEYBICK, Ramsbury, Hungerford, Wilts: December 18th, 1876.

*Lygus pellucidus*, Fieb., in Morayshire.—Some time during the month of October, I took, by beating, near Forres, a species of *Lygus*, which Mr. Saunders considered to be *L. pellucidus*, but recommended me to send to Dr. Reuter. This I did, and have recently got his reply. Dr. Reuter considers my insect to answer to Fieber's description, also that it is the same as his (Dr. R.'s) *L. pellucidus* (*Revisio critica Capsinarum*), but thinks, after all, it is merely a variety of *Lygus pastinaca*.—GEO. NORMAN, Clunney Hill, Forres: 14th November, 1876.

*Abnormal structure of the antenna of Hemiptera*.—On former occasions (*Ent. Mo. Mag.*, ii, 270, & iii, 200) I drew attention to the irregular formation of antennæ in species chiefly belonging to the Section *Lygæina*, in which there had apparently been a reproduction of one of the antennæ, or part of it, after casual excision. In these cases, one antenna had three instead of four joints, but one of these was longer than in the natural condition, so that the antenna as a whole approximated the other in length; whence it was inferred, that the mutilation having occurred while the insect was growing, the effort of nature to supply the deficiency had resulted in the production of one joint instead of two, but shorter than the two, and always with the terminal joint perfect in form if not in size. Mr. G. Norman, of Forres, having recently signalled his advent as a collector of *Hemiptera*, by taking *Eremocoris plebeius*, hitherto one of our rarest species (*ante* p. 166), had the goodness to send me some examples, among which I found one, of which both the antennæ were composed of three joints only, and I at first thought the fourth had been accidentally

broken off after the insect was mature. Examination, however, has shown me that while the first and second joints are of the natural length and thickness, the third is somewhat shorter, thicker, and slightly more clavate than usual, and is rounded off at the apex, very much like an ordinary terminal joint, but more obtuse. I infer, therefore, that the loss of the fourth joint took place just at the period of the last moult, when there was neither time nor material to form a substitution, and all that could be done under the circumstances was to make the third joint while still soft as much like an ordinary fourth as possible. It is the only instance of the kind I have ever seen.

Nearly all the examples of reproduction of antennæ that have come under my notice among the *Hemiptera* have been in *Lygæina*, which, from their terrestrial habits, are more exposed to the attacks of enemies living like themselves in secluded quarters under moss, grass, and *débris*; it will probably be found that the loss of antennæ is caused by geodephagous *Carabidæ*, to which the tender asparagus-like antennæ may be the only portion of the otherwise unsavoury *Hemiptera* they could eat. In the majority of cases, I presume the victim, in its struggle for existence, manages to escape from its assailant after the amputation of one, or part of one, of its antennæ.

The subject of the reproduction of last parts in the *Articulata* does not appear to have received attention commensurate with its physiological interest; this may possibly be due to the inherent difficulties of investigating it, and the requirement of patience and skill such as Newport brought to it.—J. W. DOUGLAS, Lee: 14th December, 1876.

*Hemiptera flying in December*.—Yesterday, a female *Chlorita viridula*, as verdant and lively as if just perfected, flew into my room, and for her temerity I made an example of her. The thermometer in the shade stood at 50°, the wind was S.W., and there were occasional gleams of sunshine; these conditions doubtless tempted other *Typhlocybidæ* to leave their winter quarters, though they did not visit mine.—LD.: 4th December, 1876.

ENTOMOLOGICAL SOCIETY OF LONDON: 6th Dec., 1876.—Sir S. S. SAUNDERS, C.M.G., Vice-President, in the Chair. Professor E. Grube, of Breslau, and Dr. Katter, of Putbus (the notice of whose election in our last No. was premature), were elected Foreign Members; and Lord Dormer was re-elected a Subscriber.

Mr. McLachlan exhibited (by request of Mr. W. D. Roebuck, of Leeds) examples of locusts taken last autumn in several localities in Yorkshire, over which county a swarm had evidently passed (details are given in the present No. of this Magazine).

Mr. W. C. Boyd exhibited living larvæ of the Trichopterous insect known as *Brachycentrus subnubilus*, in their quadrangular cases, reared from the eggs. He had, on previous occasions, exhibited the same larvæ, but had not, until now, succeeded in keeping them alive for so long a time; the cases being more than half-an-inch in length, and the larvæ healthy. Latterly he found they would feed on water-cress (*Nasturtium officinale*).

Mr. S. Stevens (on behalf of Mr. E. Birchall) exhibited *Cirrhædia zerampelina*, var. *unicolor*, *Agrotis lucerneæ*, var. *latens*, and a small variety of *Zygana filipendula*, with its cocoon, which was whitish instead of yellow.

Mr. Meldola made the following remarks, in explanation of an exhibition made by him of parasites on the "Cabbage Butterflies!"—At the Meeting for July, 1875, Mr. Riley requested that English entomologists would supply him with cocoons of *Microgaster glomeratus*, in order that, by breeding the parasites, he might introduce them into America, and thereby check the ravages of *Pieris rapæ* on that continent. At a subsequent meeting, Mr. McLachlan had suggested that the *Microgaster* was possibly only parasitic on *P. brassica*; and that he did not remember to have seen larvæ of *rapæ* infested by it. Mr. Meldola said that the parasites bred by him from *P. rapæ* were not the *Microgaster*, but a species of *Pteromalus* belonging to the *Chalcididae*. In addition to the ordinary parasite, he had obtained a *Tachina* from *P. brassica*. Mr. E. A. Fitch remarked that Von Vollenhoven obtained an ichneumon (*Pimpla examinator*) from *P. napi*. [The Editors desire to obtain authentic information as to whether any entomologist has observed the characteristic *Microgaster* cocoons surrounding the larvæ of *P. rapæ*].

Mr. F. Smith stated that from an otherwise empty nest of *Osmia muraria*, from Switzerland, he had bred an example of *Trichodes alvearius*, one of the *Cleridae*.

Sir S. S. Saunders exhibited microscopic slides prepared, and forwarded, by M. Lichtenstein, of Montpellier, illustrating the primitive hexapod larvæ of *Mylabris*, &c. Also a collection of insects from Corfu, sent by Mr. Whitfield.

The Secretary stated that an example of *Deiopeia pulchella* had been taken recently near Falmouth, by Mr. James, of Truro, and exhibited a photograph of it forwarded to him.

Mr. C. O. Waterhouse read descriptions of 20 new species of *Coleoptera*; and also a very interesting analysis of Gemminger and Von Harold's Catalogue of *Coleoptera*, now completed. He found that 11,618 generic terms appeared in this Catalogue, of which 7364 are adopted (the others sinking as synonyms). The number of species catalogued and considered distinct, were 77,008, and those not included, but recently described, must raise the total to about 80,000. In 1821, Dejean catalogued 6692 species, whilst the edition of 1837 elevated the number to 22,099.

#### DESCRIPTIONS OF A NEW GENUS AND SOME NEW SPECIES OF NEW ZEALAND COLEOPTERA.

BY D. SHARP, M.B.

The species here described are amongst the most interesting of the *Coleoptera* I have lately received from New Zealand. The new Longicorns were sent to me by Captain Broun, in the spring after I had transmitted to Mr. H. W. Bates the species of the family described by him in the August number of this Magazine.

##### ENARSUS WAKEFIELDI, n. sp.

*Indumento fusco tectus, suprâ valde rugosus, prothorace basi utrinque excisione profunda. Long. 9 mm.; lat. elytrorum, 4½ mm.*

This species is just the same length as *E. Bakewelli*, Pascoe, but is considerably narrower, the latter species being about 5½ mm. across

the elytra; in sculpture and clothing the two species are almost identical, but *E. Wakefieldi* has the excision of each side of the base of the thorax considerably longer and narrower. (For description and figure of *E. Bakewelli*, see Journal of Entomology ii, p. 445, pl. xx, f. 1).

This fine species of *Colydiidae* was found by Mr. Wakefield, at Peel Forest, March, 1874.

*ENARSUS RUDIS*, n. sp.

*Indumento fusco tectus, suprà valde rugosus, prothorace basi utrinque excisione profunda. Long. 6½ mm.; lat. elytrorum, 4 mm.*

This species differs from *E. Wakefieldi* by the smaller size and shorter form, and its considerably shorter metasternum. From *E. Bakewelli*, its much smaller size and the deeper emarginations at the base of the thorax readily distinguish it. Though the three forms are so very similar to one another, I think it most likely they will prove to be distinct, and not one variable species, though only the examination of a number of individuals can render this decision satisfactory.

Christchurch, found by Mr. Wakefield.

*LEPERINA WAKEFIELDI*, n. sp.

*Fusca, depressa, subopaca, squamulis subvariegatis, irregulariter minus dense vestita; thorace transverso, angulis posterioribus subobtusis, medio arcis lævibus tribus sat discretis; elytris subtiliter costatis, costis subinterruptis. Long. 9—12 mm.*

Labrum large and much exerted. Thorax 2½ mm. in length along the middle, and 3½ mm. broad; it is a good deal contracted behind the middle, so that the hind angles appear obtuse but are nearly rectangular; the sides bear dense coarse punctures; on the disc are three ill-defined, irregular, smooth spaces, separated from one another by rather sparing punctures; the sides bear some pale inconspicuous scales. Elytra with seven rows of fine costæ, which are only slightly interrupted; their surface clothed, but not in a very conspicuous manner, with patches of black and greyish scales. Legs nearly black.

This species has been found at Christchurch by Mr. Wakefield, after whom I have named it; it is just about intermediate between *Gymnocheila nigro-sparsa*, White, and *Leperina Brounii*, Pasc., and is probably rather closely allied to *Gymnocheila sobrina*, White, which I know only by White's description; but I expect White's species will prove to have the elytra more variegated, and their costæ more interrupted. Herr Reitter has recently divided *Leperina* into two genera, viz., *Phanodesta* and *Leperina*, but it seems to me pretty



certain that such a division is at present uncalled for. The New Zealand species are associated with some Chilian ones in *Phanodesta*, *Leperina* being formed by Australian species.

*SAPHOBIUS WAKEFIELDI*, n. sp.

*Subquadratus, supra opacus, subtus sat nitidus, obscure nigro-æneus, elytrorum margine plus minusve testaceo, pedibus rufis, antennis testaceis clava fusca; capite thoraceque dense punctatis, hoc basi medio longitudinaliter impresso; elytris sericeo-opacis, obsolete striatis; pygidio exserto (subperpendiculari), leviter inflexo.*

*Long.*  $4\frac{1}{2}$  mm.; *lat.* 3 mm.

In the male, the hinder part of the metasternum is slightly impressed in the middle, and the apical ventral segment is a good deal shorter in the middle than it is in the female; otherwise the two sexes are quite similar.

Four individuals of this species were captured by Mr. Wakefield (after whom I have the pleasure of naming the species) in the Otira Gorge, Canterbury.

OBS.—This species is extremely similar to *Saphobius Edwardsi*, but is a little larger, and the front tibiæ are less curved, the metasternum is longer, and the femora are red. In the individual from which I described *S. Edwardsi*, the pygidium is entirely immersed under the elytra, while in the two individuals of *S. Wakefieldi* before me it is quite exposed. It is, therefore, probable that the position of this part in the unique individual of *S. Edwardsi* is the result of an accident. The genus *Saphobius* is very close to the Australian *Homodesmus* (which is probably synonymic with *Canthonosoma*, MacLeay), but has the hind tibiæ differently formed.

*HETERONYX PUMILUS*, n. sp.

*Angustulus, subcylindricus, rufo-testaceus, subopacus, parce subtiliter punctatus, elytris stria suturali minus distincta.*

*Long.*  $4\frac{1}{2}$  mm.; *lat.* 2 mm.

Labrum quite visible from above, very transverse; sides of the clypeus explanate or turned upwards, the labrum filling the space between them; anterior part of head with rather rough tubercular sculpture, hinder part more sparingly and indistinctly punctured; antennæ small, eight-jointed. Thorax broad and short, nearly as broad as the elytra, the hind angles entirely rounded; the surface sparingly and obsoletely punctured, the sides with long cilia. Scutellum large, indistinctly punctured; elytra elongate and narrow, finely and not closely punctured, the sides ciliate, the suture with an indistinct stria. The front part of the labrum is broad and very short, and its anterior edge emarginate. The tarsal claws are simple.

I am indebted to Mr. Pascoe for the only individual I have seen of this species. There are a great number of allied species in Australia, but the genus has not before been indicated as represented in New Zealand. I have in my collection a New South Wales species (I believe undescribed), which is extremely closely allied to *H. pumilus*, but is a good deal broader.

*BUPRESTIS ENYSI, n. sp.*

*Elongatus, angustulus, nigro-æneus, elytris maculis transversis quatuor luteis; prothorace quadrato, lateribus ante basin subconstrictis, profunde ruguloso; elytris profunde striato-punctatis, latera versus rugulosis, lateribus postice serratis, angulo apicali externo spinoso; corpore subtus æneo, lateribus sparsim albido-pilosis; antennis pedibusque elongatis, gracilibus.*

*Long. 8—10 mm.*

Head densely punctured. Thorax transversely quadrate, the sides nearly straight but very slightly contracted just before the base, the hind angles directed therefore somewhat outwards; it is covered with deep, coarse rugæ, and in front of the scutellum there is a deep fovea; the base is very closely connected with the elytra. The elytra are elongate, and are furrowed by very deep striæ, which are coarsely punctured, the interstices are rather narrow, the third from the suture being somewhat more raised, and its basal portion rather broader than the others; the sides of the elytra are coarsely rugose, so that the striæ are there quite indistinct, the suture at the extremity is a little prominent, and the outer edge of each elytron ends in an acute tooth; on each elytron, there are two transverse yellow marks, the upper pair of which are placed a little obliquely. The under surface is rather closely punctured, except along the middle of the ventral segments, and the punctured parts bear fine white hairs. The prosternum is very densely punctured, and its process is broad and short.

This insect is named, at the request of Mr. Wakefield, in honour of J. D. Enys, Esq., its discoverer; it has since been found by Mr. Wakefield, near Christchurch, I believe.

This species may, I think, be placed at present in the genus *Buprestis* (*Ancyllochira*, auctt. plur.), though the prosternal process is remarkably short, and its apex is broad and rounded. There is no suture to be seen between the middle legs, so that I cannot say whether the cavity for the reception of the prosternal process is formed entirely by the mesosternum or partly by the metasternum.

*XUTHODES APICALIS, n. sp.*

*Capite prothoraceque fulvis, opacis; elytris nitidis, flavescentibus, nigro-punctatis, pone medium fascia angusta, punctis pone fasciam haud nigris, ad apicem densioribus; thorace impunctato, obsolete tuberculato.*

*Long. 14 mm.*

This species greatly resembles the figure given by Mr. Pascoe of

*Xuthodes punctipennis*, and has a similar peculiar sculpture of the elytra; but in *X. apicalis* the punctures behind the fascia are not black, and though those immediately behind the fascia are smaller and distant, those near the apex are coarse and closely placed. The head in *X. apicalis* is only indistinctly channelled between the eyes.

Sent from Tairua by Captain Broun, with the information that he had only been able to find two individuals of the species.

**XUTHODES BATESI, n. sp.**

(*Oculus in vertice remotis*). *Piceus, antennis, pedibusque rufescentibus, elytris fusco-testaceis, lineis longitudinalibus eburneis, punctisque sat magnis, remotis, apicem versus obsoletis.* Long.  $16\frac{1}{2}$  mm.

Antennæ with the 2nd and 3rd joints sub-equal, the 3rd slightly the shorter, and much shorter than the 4th and following joints. Thorax with the anterior angles very obtuse and indistinct, and without the slightest projection; it is about as long as broad; the sides are about straight till behind the middle, and are thence distinctly narrowed towards the base; the surface is rather dull, but bears some distant punctures and a fine pubescence; in front of the middle, there is on each side a shining obtuse elevation, and along the middle just behind these a slightly elevated longitudinal smooth space. The elytra are shining and of a smoky-yellow colour, and each has three rather undulated, paler, ivory-like lines, and the suture and external margin are also similarly pale; they bear also scattered pits or punctures of an obscure reddish colour, those towards the apex being obsolete.

Two individuals of this species have been found in the Hikuwai forest by Captain Broun, one in December, 1874, the other on 16th January, 1876. The individual he sent me bore the number 15 to distinguish it.

I have named this striking species in honour of Mr. H. W. Bates, and have done so with the more reason because it seems, from information sent me by Mr. E. W. Janson and Mr. C. O. Waterhouse, that the species described by me as *Zorion Batesi* is probably *Z. guttigerum*, Westw.; *Xuthodes Batesi* differs from *X. apicalis* and *punctipennis* by its more remote eyes, and slight differences in other details of structure, but I do not think it is necessary to make a new generic name for it at present.

**DROTUS ELEGANS, n. sp.**

*Elongatus, perangustus, minus convexus, fusco-rufus, capite thoraceque obscurioribus, parcius griseo-pubescentibus, prothorace inæquali, biconstricto, elytris sutura, lineisque duabus pubescentiâ pallidâ.*

Long. 11 mm.; lat. elyt. basi,  $1\frac{3}{4}$  mm.; long. anten.  $11\frac{1}{2}$  mm.

Head rather coarsely and closely punctured, of an infusate reddish or somewhat pitchy colour, with a few short, depressed, delicate, silvery hairs. Thorax elongate

and slender, on its dorsum in front of the middle obtusely elevated, the elevation somewhat notched at its summit, behind the middle with a curved elevation extending from side to side, but becoming obscure on the dorsum; this curved swelling makes the broadest part of the thorax; the colour and sculpture are similar to those of the head. Elytra of a reddish colour, dull, their sculpture rather coarse and close but indistinct; along the suture and down each are two lines of somewhat silvery pubescence, and there is also a much less distinct marginal line of such pubescence. Under surface reddish, with scanty silvery pubescence. Legs reddish, thickened portion of the femora rather darker.

A specimen of this interesting species was transmitted to me in spirit by Captain Broun as No. 198, and accompanied by the information that two individuals had been found by him on birch near Tairua.

It is advisable to make a new generic name for this species, and below will be found such information as is necessary to explain the name *Drotus*.

### DROTUS, *n. gen.*

(*Cerambycidae*, *ex aff. Calliprasonis*).

Head obliquely declivous in front, and produced into a broad process, which has an elongate impression on each side in front of the eyes: eyes distinctly, but still only a little, emarginate (less than in *Stenopotes*, Pasc., *fide* Ann. Mag. Nat. Hist., 1875, pl. v, f. 7a, but more than in *Calliprason Sinclairi*): antennæ with the basal joint very elongate, and swollen towards the extremity; third joint elongate: thorax very uneven, constricted in the middle and again at the base: elytra slender, elongate, depressed: legs very elongate, slender: femora not abruptly broader towards the apex. General form very elongate and slender, especially posteriorly.

The allies of this species are almost certainly *Calliprason Sinclairi* (unknown to Lacordaire) and *Stenopotes pallidus*, Pascoe; from the former it differs by the elongate and obliquely declivous front of the head, and by the peculiar form of the thorax; the antennæ and legs of the two being rather similar. The insect apparently agrees with *Stenopotes pallidus* in the form of the head, but departs from it in the form of the thorax and antennæ.

Lacordaire's groups of the allies are evidently artificial, but the present insect would doubtless have been placed by him in one of the first three "groupes" of his section *B. Cerambycides*.

### HYBOLASIUS LANIPES, *n. sp.*

*Oblongus, nigricans, minus dense albido-vestitus, prothoracis tuberculis magnis; elytris parce punctatis, tuberculis basalibus valde elevatis, acuminatis, nudis; tibiis longius sed minus dense albido-setosis.*

*Long. 7 mm.*

Basal joint of antennæ thick, black; 3rd and following joints reddish, with their apices infusate, their setæ rather long and conspicuous. Head with the antennal elevations acute, the vertex deeply impressed, and more densely clothed with the nearly white pubescence than the other parts. Thorax with the lateral tubercles large and pointed, its pubescence scanty and easily removed, and the surface then without sculpture and nearly shining. Elytra rather elongate and narrow, with an irregularly distributed whitish down, and some upright black setæ, and with distant coarsish punctures, which are quite obsolete before the apex, at their base with two strongly-elevated, acute tubercles, which are destitute of pubescence. Legs rather long, tibiæ reddish towards the knees, elsewhere blackish, but somewhat variegated by the distribution of the whitish pubescence, the hairs on the inner sides of the four posterior tibiæ remarkably long and fine.

This very distinct species should be placed next *H. crista*, from which, however, it is very different; the acute, bare tubercles of the elytra, and its little variegated whitish pubescence, easily distinguish it.

Sent by Captain Broun from Tairua. I have, unfortunately, lost the number he attached to distinguish this species.

Eccles, Thornhill: *November, 1876.*

---

#### NOTES ON BRITISH *TENTHREDINIDÆ* AND *CYNIPIDÆ*.

BY P. CAMERON.

(concluded from page 178.)

*Taxonus equiseti*, Fall. (*bicolor*, Kl.)—The larvæ of this species feed on *Rumex acetosella*, in the leaves of which they make large holes, and, as they are very voracious, the plant gets its leaves nearly all destroyed wherever the creatures abound.

The upper part of the head of the larva is fuscous, the lower portion white; the mandibles brown; the eyes are placed at the end of the fuscous part. Feet and claspers white. The lower part of the body is whitish, with the spiracles brownish; the upper half green, sometimes tinted with red, probably through the contents of the food-canal shewing through; the skin is in furrows, and obscurely marked with black. When it becomes full-fed, the body gets stouter and shorter, and the skin assumes a yellowish tinge. I presume that in a state of nature the larvæ do not spin cocoons, but pass the winter in the stems of plants, for in my breeding jar they bored into the corks and bramble stems which I provided for their use, and passed there the period of quiescence, without the protection of a cocoon, like the larvæ of *T. glabratus* (cf. Ent. Mo. Mag. xi, 118), from which they differ very little, either in form or habits, except perhaps that they

appear later in the season. So far as I know, there is but one brood in a year. It is probably the larva of *equiseti* which Kaltenbach mentions in his "Pflanzenfeinde," p. 519.

Synopsis of the British species of *Taxonus* :

A.—Posterior wings with two middle cellules; tegulæ black.—*agrorum*, Fall.

B.—Posterior wings without middle cellules.

a.—Legs reddish.

Abdomen with a red band; tegulæ white.—*equiseti*.

Abdomen without a red band; tegulæ black.—*glabratus*.

b.—Legs black.—*glottianus*.

*Selandria stramineipes*, Kl.—On recently examining my specimens of *S. stramineipes*, I found that I had among them two forms, in one of which the coxæ are black, whilst in the other these organs are whitish-yellow (except the extreme base, which is black), like the rest of the legs. Further differences between them I cannot discover; yet it is worth while calling attention to this group, as Thomson has described two new species which differ but slightly from *stramineipes*. The Swedish author describes the coxæ in the last-mentioned species, and in his *S. temporalis* (in both sexes in *stramineipes*) as black, while in his *S. analis* they are stated to be yellow at the apex, the latter species having also the anus white above. These two new species he distinguishes further by differences in the relative depth, &c., of the frontal sutures and foveæ, the length of the antennæ, and other minute points, all of which are very difficult to apply, though, doubtless, if one had types of the three species for comparison, they might be evident enough. At any rate, I have satisfied myself by an examination of a large series of specimens, both continental and British, that no reliance can be placed on pedal coloration as a means of separating the species, for I find it to vary more or less.

The form with yellow coxæ I have taken on ferns, and hence I am inclined to believe that it may be the same as the *S. cereipes*, V. Voll., the larva of which feeds on *Polystichum filix mas*.

The males are very rare compared with the females. I have in my collection only two specimens—one British, the other continental. They have the coxæ and trochanters black, and the pronotum in front of the tegulæ is distinctly yellow. Assuming that Thomson's three species are distinct, then this ♂ cannot be his *stramineipes*, for he makes no mention of its having any yellow on the pronotum in the ♂, and this is a character so apparent that it could scarcely have escaped his acute eye. The ♂ of *temporalis* and *analis* he does not mention. In those specimens having the coxæ yellow (this being a

character of *anahis*), I cannot find any with the anus white above. Dours, in his "Catalogue Synonymique des Hyménoptères de France," states that *stramineipes* feeds in the larval condition on the alder; but whether he actually bred it, or merely suspects from having found the perfect insect on that plant, that it feeds thereon, I cannot say.\*

*Selandria socia*, Kl., is merely an aberration of *S. serva*.

### Synopsis of British species of *Selandria*.

#### A.—Abdomen luteous.

a.—Eyes nearly touching the base of mandibles; labrum and base of antennæ black,

3rd antennal joint not much more than double the length of 4th; 2nd sub-marginal nervure not interstitiate.—†*serva*.

3rd antennal joint more than double the length of 4th; 2nd sub-marginal nervure interstitiate.—\**grandis*.

b.—Eyes distinctly distant from base of mandibles; labrum and base of antennæ luteous.—*flavescens*.

#### B.—Abdomen black.

a.—Tegulæ white.—*stramineipes*.

b.—Tegulæ black.

Legs yellowish.—*morio*.

Legs black and white.—*aperta*.

I was not aware of *Selandria aperta*, Htg., being a British insect until I observed it (named) in the collection of Mr. McLachlan, who took it in the London district.

*Tenthredo dispar*, Kl.—I have long been in doubt as to whether *T. dispar*, Kl., was a distinct species, or merely a variety of *T. atra*, as had been suggested by Hartig; and until this year I was unable to come to any definite conclusion regarding the matter; but I now know from my knowledge of the life-history of *dispar* that it is a good species.

*T. atra*, according to F. Rudow, Stett. ent. Zeit., xxxii, p. 386, says: "Ihre Eier anfangs Juli in dicke Blattrippen der Erlen, muthmasslich, aber nicht allein in diese." Details regarding the after

\* It may be useful to point out some errors about the habits of saw-flies, &c., in this Catalogue of Dours. *Emphytus carpini* is stated to feed as a larva on *Sorbus aucuparia*, instead of *Geranium robertianum*; *Fenusa pumila* under the dead leaves of oak instead of on birch (cf. Cameron, Proc. Nat. Hist. Soc. of Glasgow, ii, p. 7); *Monophadnus albipes*, "sur les chatons des saules," instead of on *Ranunculus*; *Athalia spinarum* and *A. rosea* on roses instead of on various *Cruciferae*; *Taxonus agilis* on "les buissons, les gazons" instead of on *Polygonum*. *Hoplocampa xylostei*, Gir., is mentioned twice—as a *Hoplocampa* and as a *Selandria*; and among the *Cynipide*. *Trigonaspis megaloptera*, Pz., and *crustalis*, Htg., are given as two distinct species, instead of the latter being regarded as a synonym of the former.—F. C.

† I believe that these two are quite distinct; nevertheless, intermediate forms occur which are not easy to class with the one or the other, so that the question whether they are to rank as species or varieties can only be definitely settled by breeding both the forms.—P. C.

life-history of the larva he does not give; but he mentions that from his observations on *atra* and *dispar*, he has no doubt about their distinctness. It is also stated by Dours (*lib. cit.*) that the larva of *atra* "vit sur les Ribes, les Salix;" he also giving *dispar* as a distinct species; while, on the other hand, Dietrich (Mitth. d. schweiz. ent. Ges., ii) regards it as a variety. If the observations of Rudow and Dours be then correct, there can be no hesitation in treating *dispar* as a good species, since its larva is attached to *Scabiosa succisa*, on which it feeds in July and August. It has the head black, except the face, and at the sides, which are green, the eyes being situated in the dark portion. Body dark green; the folds of the skin marked with black, and across the back there are darker green stripes proceeding from the edges to the centre, but still remaining apart; below the spiracles the sides are of a lighter green, and the feet are of the same colour. Across the skin there are also whitish raised dots—two rows to a segment,—and the head bears a few scattered hairs. When alarmed or touched, it rolls itself up into a ball, and ejects a brownish liquid from the mouth. I could not see if anything issued from the sides, as in the *Cimbicides*. When full-fed, it became of a glassy light green colour, and proceeded to pupate in the earth.

Length, 13-14 lines.

*Tenthredo mesomela*, L., *sec.* Thoms. (*viridis*, Kl.)—The following is a diagnosis of the hitherto undescribed larva of this species: Head deep shining black; mouth parts pale; upper part of the body deep black; sides pale, spotted with pale brown; feet white, claws black. Body covered with white tubercles and short hairs. Full-fed: shining olive-green; pupates in the earth. Length, 12 lines. Food-plants: *Ranunculus*, *Heracleum*, and apparently others.

*Emphytus calceatus*, Kl.—Last year I was fortunate enough to discover the larva of this *Emphytus* at Possil Marsh, feeding on *Spiræa ulmaria*. It has the head deep black, with the mouth parts paler. The upper part of the body is slaty-black, often with a greenish tinge; the rest of the body, with the feet, white, the claws being also of this colour. The skin is wrinkled and furrowed, and bears a few hairs. The spiracles are darkish. In confinement, it passed the pupa state in bramble stems, and in form and habits does not differ from the other larvæ of the genus. Length, 12 lines. With regard to the imago, I may add that I have in my collection a specimen without a coloured band on the abdomen.

*Spathogaster albipes*, Schenck, Beitr. z. Kennt. d. nassauischen



*Cynipiden*, pp. 84, 85, and 110; Mayr, *Die mitteleuropäischen Eichen-gallen*, p. 50, No. 72, pl. vi, f. 72, I find commonly around Glasgow. The very small size of the gall renders it easy to be overlooked.

*Aulax hieracii*, Bouché.—This gall-insect is regarded by Dr. Mayr (and I have no doubt correctly) as a variety of *A. sabaudi*, H. I found the galls in great abundance at Baldernock on *Hieracium sylvaticum*, close to the roots of the plant, half buried in the soil.

*Periclistus caninæ*, Hartig, is a common inquiline in this country, in the galls of *Rhodites eglanteriæ*, but seems to have been hitherto overlooked. The galls tenanted by the guest gall-fly are readily known from those inhabited by the gall maker, by their being considerably larger, more irregular in shape, of a whitish-green colour, rarely relieved by any red, and more particularly by being polythalamous.

*Ceroptres cerri*, Mayr, Verh. z.-b. Wien, xxii, 725.—At Cadder Wilderness I have taken two examples of a *Ceroptres*, which agree very well with the description of *C. cerri*, and also with a type of that species which I received from its able describer. According to Dr. Mayr, *cerri* is an inquiline in the galls of *Cynips cerricola*, *Dryophanta macroptera*, *Andricus circulans*, *A. multiplicatus*, *A. crispator*, and *Spathogaster glandiformis*, none of which I have hitherto found in Scotland. At p. 672 of the above-mentioned work, Mayr states that of *C. arator* he has bred 600 females and not one male; while of *C. cerri* he has reared 98 females and only 4 males; so that in this genus we have mixed partheno-genesis as in the latter, and simple partheno-genesis, as in the former species.

Through a *lapsus* at p. 227 of vol. xi, I have written *Sapholytus apicalis* instead of *Synergus apicalis*, Hartig, Germ. Zeits., 201, 11.

*Pentacrita nigra*, Thomson, Öfvers., 1861, 399, may be added to our lists. I have taken it at Dalry in August. And also may be added:—

*Torymus hibernans*, Mayr, l. c. xxiv, p. 111, I having bred this Chalcid from the galls of *Neuroterus lenticularis*, collected in Cadder Wilderness.

*Pimpla*, sp.—Two years ago I opened a young juicy gall of *Nematus viminalis*, and found inside of it a small parasitic larva, scarcely more than a line in length, and which, from its small size, I considered to be a Chalcid. Being desirous of watching its development, I carefully closed the gall again, bound it together with a thread, and placed it in an air-tight bottle; but before doing so, I

examined with a lens the inside of the gall, and satisfied myself that this larva was its only inmate; and I may further add that the saw-fly larvæ in the galls on the same willow-bush from which the specimen in question was taken, were either in the egg or in the first moult. A day or two after closing the gall, I re-opened it, and the larva then appeared to have increased in size; this struck me as rather singular, and my curiosity being awakened, I determined to watch its progress, so it was again carefully returned to the bottle. In the course of five days it had become a pupa, and more than double the size of the larva when I first saw it, the pupa itself being smaller than the full-fed larva. From this observation it became clear to me, that whatever the larva may have been before I noticed it, it was undoubtedly, when under my scrutiny, a vegetable-feeder, feeding on the juices of the gall, which I had managed always to keep fresh. The following year I endeavoured to repeat my observations, but without success, although I examined hundreds of galls. I did notice one curious fact: in one gall I found a saw-fly larva, about three-fourths fed, along with a parasitic larva; but an accident prevented my seeing the issue of this case of what might be termed commensalism.

It will be remembered that Dr. Giraud (in his Memoir on the Insects of the Reed and *Triticum repens*) has detailed observations clearly proving that *Pimpla graminellæ* is, at least partly, phytophagous in the galls on the last-mentioned plant; and the Chalcid, *Aulogymnus aceris*, in the galls of *Bathyaspi aceris*.

Glasgow: 14th November, 1876.

---

NOTES ON THE DEGREE OF TENDENCY TO VARIATION EXHIBITED BY THE *LEPIDOPTERA* OF PEMBROKE AND ITS NEIGHBOURHOOD.

BY C. G. BARRETT.

The interesting papers on variation by Mr. Birchall and Dr. Buchanan White, in recent Nos. of the Magazine, have brought the subject so prominently forward, that it becomes almost a duty that those who are able to collect, in districts subject to any peculiar climatal influences, should record the apparent results.

In Pembrokeshire the climatal conditions are *so* peculiar, that over the greater part of the southern half of the county *tree-feeding* species of *Lepidoptera* are almost totally absent, and the number of species to be found is remarkably small. This arises, no doubt, in part, from the mildness of the winters, and, in a far larger degree, from their extreme humidity; but I think that the principal cause of

the exclusion of tree-feeding species, is the furious violence of the storms which, coming from the Atlantic, rush upon this coast from the south-west with a fury which the trees themselves can barely resist. It follows, therefore, from the scarcity of species, that the number of them which present noticeable variations is proportionately small; but such as they are, I think them worth recording.

*Anthocharis cardamines*.—In this species the male is the sex most liable to variation. Last year I recorded a specimen in which the black of the tip of the fore-wings on the upper-side was suffused down the veins, so that half the orange patch was clouded with black atoms. This variety I have been unable again to meet with; but when looking for it this spring, I took several specimens which showed a tendency in the same direction, the black tip being suffused along its inner margin and slightly down the nervures, instead of being comparatively well defined, as is usually the case. In the female, the only variation beyond what is everywhere observable, consists in a slight increase in the size of the white blotches in the black tip.

*Colias Edusa*.—In this species, as is well known, the female is the variable sex. It has not been very common here, but between June 24th and October 13th—its first and last appearances—I picked up about a score. Of these but three were females. In one the usual yellow spots in the black border of the fore-wings are of only half the usual size; in the second only three of them are visible, still smaller; while the third has its border entirely black, except a faint indication of the position of these three spots. In this last specimen the border of the hind-wings is very narrow, the usual pale spots being absent, and the space filled with dusky yellow, like the rest of the wing.

In the male I find only one slight aberration, which, singularly enough, is in the same direction as that of *cardamines*, the inner edge of the upper part of the black border of fore-wings being suffused into the yellow, and the yellow lines which cross the border, also suffused and lost, giving the apex of the wings a very cloudy appearance.

*Argynnis Selene*.—Rather common on the slopes of some of the sea cliffs. In both sexes the ground colour of the upper-side is darker than usual, though not conspicuously so, and the markings on the under-side of the hind-wings are also of a deeper brown.

*Melitæa Artemis*.—I have seen but few specimens, and of these the majority of the males resemble those from the South of England, but two or three make some approach in colouring to the beautiful

dark Irish varieties. Of two females taken, one is also dark, but the other a singular pale variety, the usual irregular transverse central line or shade being absent, the middle of the wings is occupied by a broad band of oblong pale yellow blotches. It is, therefore, a very handsome aberration, but apparently rather a freak of nature than a climatal variation.

*Lasiommata Aegeria*.—Blacker and more velvety than usual, and in the female with smaller pale yellow spots in the fore-wing. This is especially noticeable in lanes *near the sea*.

*Satyrus Tithonus*.—Also apparently affected by the neighbourhood of the sea. In this species the male is the variable sex, the dots on the under-side of the fore-wings being reproduced on the upper-side. In the typical form only one of these spots, near the anal angle of the hind-wing, is visible as a white-centered black spot on the upper-side. Here I have taken specimens having respectively two, three, and four of these dots on the upper-side, and in one or two instances all are white-centered. One of them has also two additional spots on the upper-side of the *fore-wing*; another has two on one side and one on the other; and another male has no *dots* at all on the upper-side of either fore or hind-wings, and the apical round black spot has but one faint white pupil. In fact, of a dozen specimens, no two are quite alike, but they are picked out from among numbers of the ordinary type. In the female I find no variation beyond an occasional second dot on the hind-wing.

*Lycæna Argiolus*.—One female specimen has a very *broad* dark border.

On the other hand, *Satyrus Hyperanthus* and *Janira*, *Lycæna Alexis* (*Icarus*) and *phlæas*, all of which present curious aberrations in various parts of the South and East of England, although very abundant in this district, appear to be restricted to their *normal* forms; and *L. Medon*, which is common on the sand-hills, shows no tendency towards its northern variation.

Of the very few *Bombyces* and *Geometræ* occurring here, scarcely any present any striking variation. I recorded last year a specimen of *Odonestis potatoria*, of a rich dark chocolate-brown. Those reared this year are nothing like so dark, but resemble the well-marked forms found in the Norfolk and Cambridgeshire fens.

*Abraxas grossulariata* is not at all remarkable. Of a hundred reared as an experiment, two or three proved to be dusted over with black atoms so as to look smoky, and the majority had the spots

united into irregular fasciæ; but I have nothing approaching the extraordinary aberrations produced in Yorkshire and Lancashire. On the other hand, a captured female is the largest and *whitest* I ever met with.

*Melanippe montanata* sometimes occurs in the hill districts, with the central band of the fore-wings unusually dark; but the vast numbers which enliven the lanes in the lower country are all of the usual English forms.

Although no black *Xylophasia polyodon* has yet occurred, several other *Noctuæ* show decided and interesting phases of variation.

*Epunda lichenea* is of a rich and *dark* green-grey, with faint dapplings of rufous on the stigmata, and pale band. Reared specimens are decidedly handsome.

*Anthocelis lunosa*, in its dark form, is of a very rich black-brown, but the drab and red varieties, although scarce, are quite normal.

*A. pistacina*, on the other hand, is *less* variable than I ever saw it before, but then it is also less common.

*Orthosia lota*, among plenty of the ordinary colour, presents an occasional specimen in which the red irroration is so strongly developed as entirely to suffuse the fore-wings with the beautiful colour of the sub-terminal line; and in the still commoner *Xanthia ferruginea* there is a somewhat similar heightening of colour, especially in the nervures and other markings. One specimen, however, is suffused with pale lead-colour.

Of a dozen *Xylina petrificata* taken at the ivy-bloom, several are as pale as the palest English specimens, but others have the reddish tinge well developed, and the stigmata more than usually marked.

Among the *Pyrales*, the only noticeable variation is a *Scopula ferrugalis*, spotted and suffused with dark brown; but all the other specimens seem to be of the ordinary type.

Now I will not attempt to philosophize upon these small data (lest, haply, I get out of my depth), but will just point out that the special peculiarity of climate likely to affect these species, is its excessive moisture, and that the tendency is (as suggested) to deepen or intensify the colour and markings, but that there is not, with this abundance of rain, an excessive decrease of *light*, since the rain falls rapidly and heavily; there are comparatively few cloudy days *without rain* in proportion to what are experienced in drier districts; and the

frequent and brilliant sunshine, and exquisitely clear and pure blue sky, afford a striking contrast to that of the Metropolitan and manufacturing districts, in which cases of melanism are so frequent, and consequently cases of pure melanism appear to be very rare here.

Pembroke: 15th December, 1876.

NOTES ON *RHOPALOCERA* FROM ANGOLA, WITH DESCRIPTION  
OF A NEW SPECIES OF *DEUDORIX* FROM ZANZIBAR.

BY W. C. HEWITSON, F.L.S.

Mr. and Mrs. Monteiro, who have gone out to Delagoa Bay to collect specimens of Natural History, have sent home a large number of butterflies in the finest possible condition, but, with few exceptions, which I shall presently mention, the same species which we have had from the Cape; the same too (most of them) which Mr. Rogers sent me from the opposite coast as long as he remained on the banks of the river Quanza. The collection contains specimens of *Papilio Colonna*, and a fine series of the beautiful *Acræa Rabbaia* of Ward, from Zanzibar, *Rhomaleosoma Neophron*, which I have had from the Zambesi, and a number of specimens of the rare *Erebia Panda*, notable for its lovely under-side. These were nearly all taken in the winter months, during which Mr. Monteiro says scarcely an insect was to be had in Angola. He was told that the summer would begin in October, but when he wrote to me (Nov. 5) he said: "It has been very windy, cold, and raining for the last few days, and the summer has not yet set in." Mr. Monteiro is delighted with the country, and is very sanguine that he will be able in "a couple of months time to gladden our eyes with some really fine things." He will do that if he sends us some more of the Zanzibar species, and two or three beautiful things figured by Hopffer, from Mozambique.

The following description is that of a new *Deudorix*, the female of which I have from Zanzibar:—

*DEUDORIX DARIAVES*, *sp. n.*

*Upper-side* (Male). Anterior wing dark brown; posterior wing with one tail scarlet; the base brown, the outer margin black, narrow, the lobe rufous, with the centre black, irrorated with gold.

*Under-side* grey; anterior wing with a spot at the end of the cell, and a broad transverse band beyond the middle grey-brown, bordered on both sides with white: a sub-marginal series of brown spots bordered inwardly with white; posterior wing nearly white towards the outer margin, marked near the base by five scarlet spots bordered with white, crossed at the end of the cell by a spot, and beyond the middle by a series of grey spots, bordered on both sides with brown, and by a sub-marginal brown band; the lobe and caudal spot black, crowned with gold, the spot between gold, all bordered above with yellow.

Exp.,  $1\frac{1}{10}$  inch.

*Hab.*: Delagoa Bay.

Oatlands, Weybridge: January, 1877.

# DESCRIPTION OF A NEW SPECIES OF *ARGYNNIS* FROM ARCTIC AMERICA.

BY ARTHUR G. BUTLER, F.L.S., &c.

The first examples of this species brought to this country were presented to the British Museum in 1851 by Sir John Richardson, captured between  $67\frac{1}{2}$  and  $68^{\circ}$ ; they were much worn, having evidently been on the wing for some time previous to their capture. In 1855 a nearly perfect female example, of which I here give a description, was presented by Captain Collinson, of H.M.S. "Enterprise," and forms part of a collection of 100 *Lepidoptera* made in Winter Cove and Cambridge Bay.

Soon after Mr. W. H. Edwards had commenced his illustrations of N. American *Argynnides*, to which so many of his admirable plates have been devoted, I sent him a sketch of this *Argynnis*, in order, if possible, to get a name for it. Mr. Edwards, however, wrote back to me that the species was entirely new to him, and desired me to describe it at once. As he has, from time to time, written to me since then, but has not obtained the insect, and as he still wishes me to make it known, I here append a description:—

## ARGYNNIS IMPROBA, n. sp.

Primaries above dull tawny, irrorated with brown scales, the basal area deep chocolate-brown, clothed (particularly on the internal area) with olivaceous hairs; an oval spot across the centre of the discoidal cell, a B-shaped marking at the end, a bifid spot beyond the cell, a slightly sinuous transverse discal series of diverse spots, an externo-discal series of uniform bifid spots, a sub-marginal series of angular >-shaped spots, dark chocolate-brown, and the outer border to the sub-marginal series slightly paler brown; secondaries deep chocolate-brown; an ill-defined greyish tawny oblique series of three spots immediately beyond the cell; an arched dull tawny discal fascia, separated by the dark nervures into six elongated divisions, the second to the sixth with central dark brown spots; a sub-marginal series of dark spots as in the primaries: body blackish-brown; primaries below much clearer in colour than above, the spots much less strongly defined, linear; costal border testaceous; secondaries with the basal two-thirds ferruginous, dusky and irrorated with grey scales at its external margin, the latter forming a well-marked angle upon the radial nervure, above which it is trisinate, and bordered from the costa downwards by a tapering diffused white spot; external third fleshy-brown, densely speckled with white, the outer border greyish, bounded internally by an interrupted dusky line; costal margin pure white; a sharply-angulated transverse band (as in *A. Frigga*) across the basal area, indicated by two irregular parallel dark brown lines, its sub-costal area filled in with white, and its central angle irrorated with the same: fringe testaceous; body below coffee-brown, legs tawny: expanse of wings, 1 inch 9 lines.

Allied to *A. Frigga*, *polaris*, *Tarquinius*, and *lapponica*, but differing most strikingly in the pattern of the under surface of secondaries.

British Museum: December, 1876.

ON STRIDULATION IN THE GENUS *AGERONIA*.

BY A. H. SWINTON.

That the stridulation of these butterflies must be ascribed to the same mechanical cause as we find existing in the genus *Vanessa*, is not at first obvious; for whereas the stridulous sounds produced by the latter are emitted generally while the insect is reposing, semi-torpid, and subject to some unusual excitation, the former have only been heard to emit their clicking noise when chasing each other in the free air. Yet there seems no reason on this account to anticipate a different mode of production, as I have observed that the *Vanessæ* will emit the sound on the wing as well as when at rest, motion of the wings being the only requisite for its production.

Darwin notices the sounds made by *Ageronia Feronia* (Voyage of the Beagle, iii, pp. 37-8) thus: "Brazil, May-June, 1832.—This butterfly is not uncommon, and generally frequents the orange groves. Although a high flier, yet it very frequently alights on the trunks of trees. On these occasions, its head is invariably placed downwards, and its wings are expanded in a horizontal plane, instead of being folded vertically, as is commonly the case. This is the only butterfly which I have ever seen that uses its legs for running. But a far more singular fact, is the power which this species possesses of making a noise. Several times when a pair, probably male and female, were chasing each other in an irregular course, they passed within a few yards of me, and I distinctly *heard a clicking noise*." Darwin is corroborated by Mr. A. R. Wallace (Trans. Ent. Soc., n. s. ii, 257): "The common species (at Pará), *Ageronia Feronia*, produces it (the sound) remarkably loud, when two insects are chasing each other and constantly striking together. One alone does not produce the sound in flying, and I have never heard it made by the small species, *A. Chloe*, which is equally common with the other. I am inclined, therefore, to believe that it is produced in some way by the contact of two insects, and that only the larger and stronger-winged insects can produce it."\*

Mr. E. Doubleday (Trans. Ent. Soc., iv, Proceed., p. 123) says that "he had examined *Peridromia Feronia*, the butterfly described by Mr. C. Darwin as making a noise during flight like the rustling of parchment, and that he had detected a small membranous sac at the

[M. J. B. Capronnier (Ann. Soc. Ent. Belge, xvii, p. 21) says of *Ageroniæ*—"There have hitherto been some doubts if the noise referred to was peculiar to the male, but M. Van Volxem, who has had frequent opportunities of observing the *Ageroniæ* enjoying their frolics, affirms that the noise is common to both sexes.—EDS.]



base of the fore-wings, with a structure along the sub-costal nervure like an Archimedean screw or diaphragm in the tracheæ, especially at the dilated base of the wing."

I have examined the female *Ageronia Feronia*, and find the superficies of the wings that overlap of considerable dimensions. On the surface of the hind-wing the costal vein is elevated, indurated, black, curved, and bare of scales for about 3"', and at first sight remarkably smooth and glossy. But if this apparent smoothness be observed obliquely with a strong magnifying power, in bright daylight, parallel indentations or slight striæ are seen all along its surface; and under the microscope these develop into a fine file or lima. When the wings are expanded, this costal vein is received into a little concavity in the inflated, rounded, smooth anal vein of the fore-wing, beneath and near its base, which can be traced, after the fore-wing has been detached, by the depression its great prominence leaves in the membrane adjacent. *This concavity is suited in every way to act as a clasp, sonorous when the wings are moved*, while the whole adjustment presents, in elementary form (if we overlook a slight divergence as regards correspondence of the veins), the bristle and catch that lock the wings of *Heterocera*.

Guildford: Jan., 1877.

*Stridulation in the genus Vanessa*.—Mr. Swinton's remarks (E. M. M., xiii, 169) on this subject are very interesting, and I wish that observations of a similar character were oftener made and recorded. It seems to me, however, that the object of the stridulation will bear a different interpretation from what Mr. Swinton has given it. If it belonged to the class of "phenomena of rivalry and love," the mechanism would surely be more developed in the male than in the female, but it is very much the reverse. I rather think that the object of it is intimidation of any possible enemy, and that the sound should be put in the same category as the hiss of a snake or the warning note of an angry wasp or bee. As it is on the female for the most part that the perpetuation of the race depends, she will have greater need for protection, and hence the greater development of the apparatus.—F. BUCHANAN WHITE, Perth: January 15th, 1877.

*Stridulation in Vanessa Antiopa*.—Mr. A. H. Swinton's article in this month's Magazine, p. 169, reminds me that the power of stridulation exists in *Vanessa Antiopa*. In 1872, a female *Antiopa* came into my possession, in a hibernating condition, and in that state she would, when disturbed, partially expand her wings, and, at the same time, was produced a grating sound, which seemed to come from the base of the wings.—A. H. JONES, Shrublands, Eltham: 9th January, 1877.

*Lobophora viretata* double brooded.—As it would appear, from Mr. Buckler's interesting article in the last number of the Magazine, p. 185, that *Lobophora viretata* does not appear to have been recorded as double brooded, I may state, that on the 13th August, 1873, I took, at light, a specimen of this insect, thus affording additional proof that this species, even in a state of nature, has two broods in the year.—ID.

*On variation in the larva of Pyrameis Atalanta.*—This butterfly is very abundant in the Isle of Man, and although it occurs almost everywhere in the British islands, the larva does not seem to have been very commonly observed, if I may judge from my correspondents' letters.

In the neighbourhood of Douglas, during the past summer, the larvæ swarmed in every lane, disputing the possession of the nettles with *Vanessa urticae*, and far outnumbering the larvæ of *Vanessa Io*. It is usually called a "solitary" larva—Stainton's Manual, i, 37, Newman's British Butterflies, p. 62—but the word solitary can only be applied to it here in a restricted sense, and as referring to its habit of requiring sole possession of at least one leaf for the construction of its tent, for I have taken eighteen full-fed larvæ from one plant of nettle, and left behind at least as many young ones; the plant was not a solitary one, but grew in a lane bordered with nettles, so that the female butterfly was under no compulsion to deviate from her supposed ordinary practice of depositing her eggs singly over a wide range. The larva of *Pyrameis Atalanta* varies in colour remarkably, but may generally (perhaps always) be classed under one or other of the following descriptions, and yet the colour of some of them is so far intermediate that the variation can scarcely be called simply dimorphic.

- 1.—Ground colour grey-green, varying to dingy white, the lateral stripe not very distinctly marked. This is, I think, the typical form, and the only one that I have seen in England.
- 2.—Ground colour intensely black, the lateral stripe white or yellow.

The spines on the various segments vary in colour almost indefinitely in both forms of larvæ: some being black throughout their whole length, others only tipped with black; some are white and semi-transparent, some smoke coloured. The black type of larvæ certainly predominates in the island, but not very markedly.

I reared upwards of one hundred butterflies from each form of larva, keeping well marked specimens of each type in separate cages, with the view of ascertaining what differences, if any, in the perfect insect corresponded with the strongly contrasted colours of the larva, rather expecting to find it a sexual one, but the results were purely negative. The sexes were produced in about equal numbers by both forms of larvæ. The white spot sometimes found on the upper surface of the scarlet band on fore-wings is *not* indicative of the female sex as stated by Newman (British Butterflies, p. 62), it was present in about one-tenth of the specimens, was produced from both forms of larvæ, and in about equal numbers of both sexes, it varies greatly in size, in some specimens being a barely discernible speck.

In short, I am not able to indicate any difference by which the butterflies produced from such remarkably distinct looking larvæ can be distinguished from one another. I venture to ask you to find a corner for this rather unsatisfactory note,

in the hope that it may induce some of the readers of your Magazine to tell what they know on the interesting and obscure subject of larval variation.—EDWIN BIRCHALL, Douglas, Isle of Man: December 28th, 1876.

*Acherontia Atropos in the north of Scotland.*—I have recently heard of the occurrence of *A. Atropos* at St. Andrew's and Wick, and though it is rather late to record them, still I think it would be as well to do so, as this fine moth is not often reported from Scotland.

In the autumn of 1875, a large specimen was seen resting on a shrub in a garden at St. Andrew's. It was not disturbed by any one, probably through fear, as the insect must have had rather an ominous appearance in the twilight; the other was found on a cabbage leaf by a gentleman, in his garden at Wick, and it allowed him to touch it without flying off, or showing any signs of irritation. Has any account appeared of the capture of *Atropos* so far north as Caithness?—W. M. SANDISON, Glasgow: 6th January, 1877.

[The insect has occurred still further north, in Orkney and Shetland. Its distribution in Europe is probably co-extensive with that of the potato.—EDS.]

*Eggs of Cymatophora flavicornis and Dianthæcia casia.*—At page 232 of Vol. xii, I gave some account of the egg of *Cymatophora ridens*; since then Mr. Buckler has given me the opportunity of examining the egg of *flavicornis*, and I find it nearly resembles that of its congener; it is oblong, not quite cylindrical, being slightly depressed on one side, with one end wider and blunter than the other; the shell covered all over with a small reticulated pattern—oftener triangular than otherwise, and not arranged in regular rows; the colour dull white, with the raised network slightly glistening; unless considerably magnified, these details do not show out; under an ordinary pocket lens, the shell looks slightly granulated.

So far then I have seen the eggs of two species of *Cymatophora* which do not follow the usual *Noctua* form, but a still greater deviation is exhibited by the egg of *Dianthæcia casia*; on the 18th of last June, Mr. E. Birchall sent me three eggs which he had found in his collecting box, and as he had been taking this species, he concluded they had been laid by a pinned female. However, on examination, I told him they must belong to some geometer, and, as they proved unfertile, I could say no more; but, on June 26th, he sent me a single egg, which he had detached from the ovipositor of a female *casia*, thus excluding all doubt. The egg of *casia* therefore is thus described: of a short oval outline, full, with very faint indications of a large pattern of pentagonal reticulation all over, but with the knobs at the angle of the pattern prominent; glossy; colour dull green, afterwards pale brown.

After this I shall be glad to see the eggs of other species of *Dianthæcia*, in order to settle whether this is a generic, or only a specific (special) peculiarity in the egg state.—JOHN HELLINS, Exeter: January 12th, 1877.

*How to find the larvæ of Triphæna subsequa.*—It may interest your readers to know that January and February (if the weather be mild and damp) is the season to take the larvæ of *T. subsequa*. I took it first early in January, 1874, by sweeping tufts of *Dactylis glomerata*, and afterwards took it at night feeding on the common

trailing heath-grass *Triticum repens*, and it was seen still feeding on grass as late as April. As it grows in size, it seems to seclude itself more, for after that date I could discover no trace of it. It may perhaps then take to roots. It is considerably in advance of *T. orbona*, it being nearly half-grown when *T. orbona* is very small. Here it was fed on grass to the last, but would not eat chickweed and other herbage if supplied; as two that I sent to friends did not emerge, and all mine did, I think it is possible that the more succulent herbage was too fattening, and that grass is the safest food.—HENRY WILLIAMS, Croxton, Norfolk: January 4th, 1877.

*Captures at sugar in North Wales, in October.*—The following captures at sugar in my garden at Colwyn Bay, near Conway, during the first week in October last, may be interesting, as the district has been very little worked, and has a somewhat peculiar climate. Some of the species mentioned were also taken at *Arbutus* blossoms. I have given every species taken, so as to give a fair idea of the *Noctuidæ* that occur at that time of year:—*Hydræcia micacea*, one specimen; *Xylophasia polyodon*, one specimen; *Agrotis suffusa*, two specimens; *Agrotis saucia*, two specimens; *Agrotis segetum*, one specimen; *Triphæna pronuba*, one specimen; *Orthosia lota*, one specimen; *Orthosia macilenta*, common; *Anthocelis litura*, not common; *Anthocelis pistacina*, very common; *Anthocelis rufina*, one specimen; *Scopelosoma satellitia*, one specimen; *Xanthia ferruginea*, common; *Epunda nigra*, common (!); *Miselia oxyacanthæ* (common); *Phlogophora meticulosa*, very abundant; *Calocampa exoleta*, one specimen; *Gonoptera libatrix*, one specimen.—ALFRED O. WALKER, Chester: December 18th, 1876.

*Notes on Lepidoptera in 1876.*—The past season may be said to have been an exceptional one as regards heat, and there can be no doubt that prolonged or excessive heat affects insect life as it does plant life. Botanists or nurserymen would explain to us, there can be no doubt, what excessive heat does upon vegetation; and, on the other hand, entomologists can show its effect upon insect life, and it would be interesting for us to chronicle whatever has come under our notice. I have put these notes together with these impressions upon me, as second broods of insects have occurred with me which usually only have one. And while all the insects under mentioned have not double broods, they perhaps may be worth recording. *Chærocampa Elpenor*—I took this insect, for the first time in this locality, at sugar, in June, a female which laid me a number of eggs. These hatched, fed up, and I have now 15 safely in pupæ. *Smerinthus ocellatus* and *populi*—larvæ plentiful on crab and poplar, from the latter I had a second brood of two males. *Hepialus hectus*—flying at dusk in a wood near here, common. *Limacodes testudo*—beat a larva out of birch in September, which I took to be this species not quite full-fed, green, with no perceptible legs. *Arctia caja*—found a batch of eggs which produced this species, they fed away well, a goodly number of them outstripping the rest, and 12 becoming pupæ this autumn. *Trichiura cratægi*—eggs sent me, reared 12 to pupæ, 6 of which emerged in September, the others I expect remaining over until next year. *Pacilocampa populi*—took one off a gas-lamp. *Eriogaster lanestris*—bred 5 females, I had 16 pupæ, no males made their appearance. *Metrocampa margaritata*—took a female which laid a batch of eggs, the larvæ of which

are now hibernating. *Eurymene dolobraria*—larvæ, beat two out of oak in September. *Crocallis elinguaris*—took a female which laid a batch of eggs, 140. *Ennomos tiliaria*—beat a larva out of birch, from which I reared a fine female; being anxious to obtain eggs, I placed her outside in a box, sufficiently open to admit her spouse. But of this I was deprived the pleasure, seeing that no males were attracted by her charms, and so my experiment to obtain eggs failed. *E. fuscantaria*—13 eggs sent me, I reared 7 imagos, 3 females and 4 males. These I succeeded in pairing, and they very generously laid me over 200 eggs. *Phigalia pilosaria*—found 4 larvæ in September. *Amphidasys prodromaria*—beat 2 larvæ out of oak. *A. betularia*—last autumn I collected a number of larvæ of this species off rose and apple, from these I had the pleasure of seeing come out 10 imagos in my breeding cage, 5 were of the ordinary type, and 5 were thorough black ones with the exception of two white spots at the base of the fore-wing of two of them, otherwise they were as large in expanse of wing as the type. Some entomologists appear to think that starving the larvæ is the chief cause in the production of varieties; but my experience in this instance does not bear the starving process out. These larvæ were nearly full-fed when I found them. I then placed them in a large jam-pot, supplied them with plenty of food until they assumed the pupa state. *Boarmia repandata*—took a fine female at rest on the bole of a tree: unfortunately it laid me no eggs. *Iodis lactearia*—beat a number of larvæ out of oak, these larvæ very much resemble some of the *Eupithecia*, *exiguata*, for instance; before entering the pupa state they spin loosely together the leaves of their food, then fasten themselves by their tail, and are left suspended. *Acidalia incanaria*—found 2 at rest. *A. imitaria*—a female on a grassy bank. *Eupithecia venosata*—larvæ in seed-heads of *Silene inflata*. Several *E. pimpinellata* larvæ on *Pimpinella*; *albipunctata*—bred 70 in April. *E. fraxinata*—took a female at rest on a bole of an ash, which laid me a batch of eggs. These produced me 32 larvæ, which fed up well and turned into pupæ, one of which appeared as second brood in October. *E. nanata*—a few larvæ on heather. *E. minutata*—scarce this season. *E. assimilata*—on black-currant. *E. tenuiata*—a few on willow catkins. *E. abbreviata*—beat a few larvæ out of oak in June. *E. exigua*—out of hawthorn in September. *E. sobrinata*—out of juniper in May, imagos appearing in July. *Collis sparsata*—I was fortunate in taking about 90 larvæ of this species during the summer in all stages of growth, full-grown, half-grown, and others just out of the eggs. *Dicranura bifida*—I was pleased by taking 21 larvæ of this species this season, 20 of which have spun up. *Notodonta dictæa*—bred 4 imagos, and took 5 larvæ. *N. dromedarius*—bred 2, and took a number of larvæ. *N. ziczao*—imagos and larvæ. *Thyatira batis*—one at sugar. *Cymatophora diluta*—found one at rest. *C. ridens*—beat 3 larvæ out of oak. *Acronycta tridens*—found a few larvæ on rose. *Acronycta leporinus*—12 larvæ on poplar and birch. *Leucania pudorina*—a few at sugar. *L. conma*—a few at sugar. *Mamestra anceps*—12 at rest under old mats. *Grammesia bilinea*, var.—one at sugar. *Agrotis nigricans* and *Orthosia suspecta*—at sugar. *Orthosia upsilon*—larvæ from bark of willows. *Dianthæcia carpophaga*—larvæ in seed-heads of *Silene inflata*—rather common. *D. capsicola* and *cucubali*—in seed-heads of *Lychnis dioica*. *Hadena suasa*—at sugar. *H. pini* and *thalassina*—plentiful at sugar. *Hydrelia unca*—scarce, took only two on the wing.

—THOS. WILSON, 4, North View, Holygate, York: January, 1877.

*Description of the larva of Coremia propugnata.*—I received a batch of eggs of this species through the kindness of Mr. Owen Wilson, of Carmarthen, on the 16th June last. They were globular, smooth, and polished, and uniformly pale straw-colour; two days later, or three or four after they were deposited, they had become orange, and before hatching changed to lead colour. The young larvæ appeared on the 23rd June, were slender, dark olive-brown, the head brownish. They fed up rapidly on young cabbage leaves, and, by the middle of July, were full grown. Length, about an inch, and of moderate bulk in proportion; the head has the lobes rounded, and is considerably narrower than the second segment; body rounded above and below, but the two portions are distinctly divided by the skin at the sides, forming a raised lateral ridge; it is of tolerably uniform width, tapering only a little towards the head; the segments are distinctly divided, and the skin has a somewhat tough appearance.

Ground colour dingy ochreous, but (except on the last four or five segments) is almost entirely covered with dark, dull smoke-colour; in some specimens this dark shade is nearly black, whilst in others a very dark green tint is observable: head glossy, pale brown, with darker brown spots; dorsal line darker green, paler on the posterior segments; sub-dorsal lines rather waved, grey; there is also an indistinct finer grey line between the sub-dorsal and spiracular regions, but there are no perceptible spiracular lines. On the anterior of each segment, and situated on the dorsal line, is a conspicuous, rather large, black spot, and this spot is generally preceded by an equally conspicuous paler mark, of various tints in different specimens, in some being pink, in others grey or yellowish; spiracles distinct, black, the raised tubercles grey.

Ventral surface dull ochreous or (in some specimens) pinkish; it has a fine smoke-coloured central line, enclosed in a band of the ground colour, outside of which, on each side, is an olive band, bordered outwardly with a fine smoky line, and there are faint indications of one or two other waved lines between this and the spiracular ridges; on each side too is a double series of black dots of two sizes, a large one being in front, followed by a smaller one.

The pupa is enclosed in a silken cocoon, and is about two-fifths of an inch in length, rather dumpy, smooth, and highly polished; thorax cylindrical; wing-, eye-, and antenna-cases boldly defined; the abdomen attenuated, but not rapidly, towards the anal point, which, however, is fine and sharp. Colour dark brown, the antennæ-cases and outer edges of the wings pale brown; the whole changing to deep mahogany-brown just before the emergence of the imago.

All the brood, forming a very fine series, emerged about the middle of August. —GEO. T. PORBITT, Highroyd House, Huddersfield: *January 4th, 1877.*

*Natural History of Asthena sylvata.*—On the 15th of last July, I was very glad to receive some eggs of this species, which had been obtained by Mr. J. Batty, on the 4th of the month; the larvæ were hatched on the 16th, fed away at once on alder, preferring all through their growth tender open leaves, but avoiding the sticky leaf-buds; they grew rapidly, and by August 8th, were in their last skin, and, in a few days more, would have been full-fed, when I had the misfortune to get them killed. To replace them, Mr. Batty kindly sent me the larvæ he had been rearing himself, but I found these were by no means so far advanced as mine had been, for,

by August 15th, they were not half-grown, and did not pass their last moult for another week; however, by the beginning of September, they had spun up. A larva captured by Mr. McLachlan, in Devonshire, in 1875, did not spin till the second week of September, whilst one lent for figuring in 1874, by Mr. A. H. Jones, was nearly full-fed by July 17th. These dates—varying from the middle of July to the middle of September—for the maturity of the larva, almost give time enough for a second brood, but I suppose the safer inference is that the single brood of moths has a flight of some duration.

The egg is bluntish-oval in outline, flattened, the shell embossed all over with a small triangular pattern, the colour very pale yellowish-white throughout, no change taking place to the last; hence it is necessary to watch very carefully for the hatching of the larvæ, for there is nothing to give warning of their exit, and, being very delicate, they will soon die if not supplied with food.

The newly-hatched larva is of a very pale greenish-white tint, the head very slightly tinged with brown, the skin shining, the usual hairs fine, and whitish in colour. As the larva grows, and up to the last moult, it becomes more translucent; when three-eighths of an inch long its figure is stumpy, the segments looking puffed, stoutest at the 9th, and thence tapering towards either end; the body now looks quite pellucid, except that the internal organs show as a pale dull green stripe down the back, and the puffed spiracular region is pale yellowish-green; the small head black. With the last moult comes a complete change: the pellucid look disappears, and a very handsome contrast of colours is seen, the tints of which, as usual, are much richer and deeper at first, becoming gradually paler as the larva approaches maturity. When full-fed, the larva measures five-eighths of an inch in length, or nearly three-fourths when fully stretched out, in figure stoutest at 9 and 10, tapering considerably towards the head, which is the smallest segment, and has its lobes well-defined, and not so much towards the tail; this actual tapering of the figure appears much enhanced to the eye by the arrangement and outline of the markings; all the segments plump, and well-defined; a favourite attitude of the larva is to rest along the midrib at the back of a leaf, with the head held up; segments 2 to 5 kept close to the leaf, 6 to 9 raised in an arch or sometimes a loop, and 10 to 13 again pressed close to the leaf.

The colour of the head is shining blackish-brown, the triangular space between the lobes in front pinkish, barred across above the mouth with blackish-brown, the lip and base of palpillæ pinkish, the jaws blackish-brown; on the 2nd segment is a narrow black shining plate, from which commences, on the back, a broad marking of dark purplish-brown, widening as it proceeds, and obliterating the pale yellow-green ground, at the end of the 5th segment it reaches below the spiracles and begins to spread over the ventral surface, in some examples quite enveloping the whole body, as far as the 9th, on which segment its colour becomes rosy-red, and thence narrows again as a dorsal stripe to the anal extremity; this dark marking is darkest—almost black—on its lower edge, and has throughout a narrow edging of sulphur-yellow melting into the yellow-green below; on each side of the 5th is a patch of yellow on the yellow-green ground, and there is an elongate yellow patch on each side of the 9th, showing very conspicuously on the dark colouring which there surrounds it; on the dark marking at the beginning of segments 5, 6, 7, and 8, is a squarish dorsal violet mark, whence slants backward on either side a whitish streak, thus forming

nearly a perfect chevron pointing forwards ; the dorsal line can scarcely be traced on the thoracic segments, but thence backwards it continues as a violet-white line to the anal extremity ; on the dark marking the shining black tubercular warts project conspicuously from white rings, on the green portions they are also green, small in size, and escape notice ; the spiracles are also inconspicuous, being small, and of the same colour as the segments, on which they happen to come ; all the legs are yellow-green.

The cocoon is placed just on the surface of the soil, and formed of small particles of earth, leaves, &c., fastened together with a tough, although not hard, lining of pale silk ; the pupa is five-sixteenths of an inch in length, rather stout in proportion, the abdomen tapering off rapidly from the end of the wing-cases, and ending in four or five curled-topped spines of unequal lengths, but twisted together so as to look like a spike ; the eye-cases rather prominent ; in colour the wing-cases are tinged with greenish, all the rest mahogany-brown and shining.

I have now made acquaintance with the earlier stages of three species of *Asthena*, namely : *candidata*, *sylvata*, and *Blomeraria*, and find them exhibiting as close a resemblance in these, as in the perfect state ; of *luteata* I do not know so much, and am anxious to know more, and shall be extremely obliged to any one who, during the coming season, will kindly forward me a few eggs.—JOHN HELLINS, Exeter : January 10th, 1877.

*Melanism in Lepidoptera.*—It seems somewhat absurd for me to enter an arena of controversy where Mr. Edwin Birchall and Dr. F. Buchanan White are to be found ; truly the circle is one "where angels might fear to tread," but it does appear to my humble judgment that both have to some extent overshot the mark in trying to account for varieties of coloration in *Lepidoptera* ; first, Mr. Birchall quotes from learned writers who assert in fact that darker coloured animals, from the lower orders up to the superior animal man, have advantages in freedom from disease, less liability to parasites, superior acuteness of the senses, &c., which their paler coloured fellows do not possess ; I must say I do not see any foundation for this doctrine ; in the races of men it certainly does not appear to hold good, as the fair-haired Saxon is able to hold his own physically and intellectually against the darker races, the single instance in which the rule holds being the albino in all animals, but this is, after all, a diseased type. If Mr. Birchall's theory of survival of the fittest be true, and that the darker races in insects, animals, and the superior animal man are the fittest, the inevitable conclusion to which it points is that the darker forms in insect and animal life, and the Negro in man, would, after so many ages of natural selection, largely predominate in the world, the contrary being, however, the fact.

Secondly, Dr. White, adopting the natural selection theory, appears to reject Mr. Birchall's notion that cold, damp climates, with the absence of sunshine, may be the cause of the origin of variations of colour, and suggests meteorological causes.

May we not then very easily suppose that variations of colour in insects may be, so to speak, accidentally produced by external objects, present to their acute vision during the process of generation, and this may occur again and again ; it seems to me a less far-fetched theory than to assert dogmatically that dark coloured insects are endowed with stronger constitutions, and are therefore perpetuated by natural selection.—S. RADCLIFF FETHERSTONHAUGH, 17, Eccles Street, Dublin : December 20th, 1876.



*Supplementary note on *Xylophagus ater* and *X. cinctus*.*—In my notes on these species (E. M. M., xiii, 160), I overlooked certain articles which are referred to in the Zoological Record, and which I have not yet had an opportunity of seeing. Damianitsch (Verh. zool.-bot. Ges. in Wien, xviii, 117) found the larva of *X. ater*, under alder bark, and describes its metamorphoses. Frauenfeld (l. c. 166) confirms Drewsen's statement that the larva is carnivorous. The transformations of *X. cinctus* are re-described and figured by Perris (Ann. Soc. Ent. Fran., 4<sup>e</sup> série, x, 202, &c.), who found the larva in the galleries of *Tomicus stenographus* in *Pinus maritimus*. He thinks it feeds on the "frass" of the beetle, and is occasionally carnivorous.—F. BUCHANAN WHITE, Perth: December 23rd, 1876.

*Locusts in Yorkshire.*—In addition to those recorded in the E. M. M., for January, by myself, I will add that Mr. N. F. Dobrée, of Beverley, informs me that two were taken at Beverley during the latter half of August, which he saw alive. He states that the length was fully 2½ inches, and the colour grass-green, while that of a smaller specimen, taken at Spurn (the extreme south-east point of the county), during the first days of September, is a more yellow shade of green. He also informs me, on the trustworthy authority of Mr. Philip Lawton, of Easington, four miles from Spurn, that eight specimens were taken there during the second week of September, three of which are in Mr. Lawton's possession. Mr. Lawton also adds that two were brought to him in 1875, and that locusts are of frequent occurrence in the summer. Can it be that locusts breed in the British Islands? they seem to occur on some portion of our coasts or inland nearly every year. I have seen records of their abundant occurrence at or near Spurn Point in 1842, 1846, 1858, 1859, 1875, and 1876.—WM. DENISON ROEBUCK, Leeds: January 15th, 1877.

*Locusts in Yorkshire.*—I have had some correspondence with my friend Baron De Selys-Longchamps respecting the species of *Pachytylus* to which the examples noticed in our last No. should be referred. He agrees with me that they are certainly *P. cinerascens*, and adds, that he is persuaded that this species breeds regularly in Britain (as, according to him, it does in Belgium). I do not share this opinion; but it is probable that the greater part of those taken in Britain are *cinerascens*.—R. McLACHLAN, Lewisham: 30th December, 1876.

*Change of generic name (Parthenos, Hübn.).*—I propose to substitute for the above generic name, occurring in all the American lists of *Heterocera*, the generic name *Catocalirrhis*, reading thus:—

CATOCALIRRHIS, W. V. Andrews.  
*nubilus*, Hübn.

My reason for this is, that *Parthenos* is also used by Hübner for a genus in *Rhopalocera* (Verz. bek. Schmett., 38, 1816); and, without reference to the law of priority, which does not apply in a case like this, where the same name is used by an author for two different genera, I think it desirable to suppress the generic name covering the fewest species; this, on the ground of convenience.—W. V. ANDREWS, 36, Boerum Place, Brooklyn, New York: December 26th, 1876.

[It is possible that the law of priority does apply in this case, as Hübner's "Verzeichniss" was in all probability published in sheets, in which case the *Rhopalocerus* genus would stand by date. Hübner put only one species in it, however; so it is difficult to see how the idea of suppressing the name covering the fewest species can apply: Boisduval, moreover, has already re-named this first genus *Mimetra*, but without special reason, just as he re-named all the others that he took up. The species of the *Heterocerous Parthenos*, by the way, is *nubilus*, and not *nubilus*.—EDS.]

ON STRIDULATION IN THE GENUS *ACHERONTIA*.

BY A. H. SWINTON.

The mouse-like cry of the European death's-head moth has long engaged the attention of naturalists, as may be seen in an article by H. N. Moseley, Profs. Westwood and Rolleston, in the number of "Nature" for June 20th, 1872. Réaumur says the sound is produced by *the friction* of the haustellum against the palpi; Roesel considers it due to *the friction* between the abdomen and thorax; Rossi to *expiration* of air from the haustellum; Schröter to *the friction* of the haustellum and head; Engramelle says it proceeds from the "spallette;" and Lorey from *expiration* at the base of the abdomen; Passerini from the haustellum, caused by *expiration* from a suction cavity at its origin; Chavannes and Rochebrune have also written on the subject. Then Burmeister thinks the seat of the voice is in the head; Vallot and Johet consider it is produced by *wing-percussion*; Wagner says it is due to *expiration* from the large vesicles at the anterior part of the abdomen, through the œsophagus and haustellum; Dugès that it proceeds from *the friction* of the opposite edges of the two halves of the haustellum; and Nordmann from *expiration* at the base of the abdomen. Duponchel and Guérin next refute Passerini, and state that the sound arises from *the friction* of the prothorax on the scutellum, and Goureaux says it arises from *a crumpling* of the plates forming the integument of the abdomen; Abicot refutes Goureaux, and Ghiliani confirms Passerini; Paris ascribes it to *a fluid* forced up and down inside the haustellum with the assistance of the palpi; and Landois to *the friction* of the palpi against the haustellum; J. Van der Hoeven says it proceeds from *friction* at the basal portion of the haustellum; Westmaas confirms Passerini and confutes Wagner; Capronnier says an imago with a deformed head was mute; Edward Newman, E. A. Johnson, W. H. Taylor, and the Rev. T. A. Preston, repeat the theories of Lorey and Passerini; and lastly, H. N. Moseley confirms the theory of Passerini, and gives a diagram and description of the cavity and its muscles.

## BIBLIOGRAPHY.\*

- RÉAUMUR. Mém. p. serv. à l'hist. des Ins., ii, 1736, pp. 289—293.  
 RÖSEL. Insecten-Belustigung; Nürnberg, 1755, § 16.  
 ROSSI. Opuscoli scelti; Milano, 1782, v, pp. 173—188.  
 SCHRÖTER. Der Naturforscher, xxi, 1785, pp. 66—83.  
 ENGRAMELLE. Papillons d'Europe, iii, 1782, pp. 84 & 85.

\* Extracted from "Nature," vol. vi., pp. 151—153, with some addition. Google

- GODART. Hist. Nat. des Lépidoptères de France, iii. pp. 18, 19; Paris, 1821—42.
- PASSERINI. Osservazioni sopra la Sphinx Atropos; Pisa, 1828.
- CHAVANNES. Act. Soc. Helv. Sc. Nat. (17th Sess.) Genève, 1832, pp. 93, 94.
- ROCHEBRUNE. Act. Soc. Linn. Bordeaux, 1832, v, pp. 120—122, tab. 1.
- BURMEISTER. Handb. der Entomologie; Berlin, 1832.
- VALLOT. L'Institut, 1834, ii, No. 34, p. 7.
- WAGNER. In Müller's Archiv für Physiologie, iii, 1836.
- DUGÈS. Traité de Physiologie comparée; Montpellier, 1838, ii, p. 226.
- NORDMANN. Bull. Acad. St. Petersburg, 1838, iii, pp. 164—193.
- DUPONCHEL and GUÉRIN. Ann. Soc. Ent. France, 1839, viii, pp. 59—65.
- GOUREAU. Ann. Soc. Ent. France, 1840, ix, pp. 125—128.
- ABICOT. " " " " ser. 2, 1843, i, bull. p. 50.
- GHILLIANI. " " " " " 1844, ii, " pp. 72—75.
- PARIS. " " " " " 1846, iv, " pp. 96 & 112.
- LANDOIS. Zeitschr. für wissensch. Zoologie, xvii, 1848.
- VAN DER HOEVEN. Tijdschr. Ent. Nederl. Vereen., 1859, ii, pp. 117—122.
- WESTMAAS. Tijdschr. Ent. Nederl. Vereen., 1860, iii, pp. 120—124.
- CAPRONNIER. Ann. Soc. Ent. Belg. Comptes Rendus, 1866, x, pp. 16 & 17.
- NEWMAN. Entomologist, August, 1865, p. 284.
- JOHNSON. " November, 1865, p. 325.
- TAYLOR. " November 20, 1865.
- PRESTON. " " " "
- MOSELEY. Nature, vi, 1872, pp. 151—153.

Many questions arise in weighing the evidence adduced by these authors, such as: is the sound emanating from this moth really due to *friction* or *expiration*? or, does it proceed from *the head* or *the base of the abdomen*? But these, and many more may, I think, be subordinated to the zoological query; may it be termed a *species of stridulation* as defined by Goureau, Annales de la Soc. Ent. de France, 1837, p. 31 (Entomological Magazine, January, 1838, p. 89, &c.), and is an organism representing *the lima and clasp* implicated in its production? Now, Dr. H. Landois, as may be seen from his pamphlet, "Die Ton-und Stimmapparate der Insecten," published at Leipzig in 1867, a reprint from the Zeitschrift für wissenschaftl. Zoologie, xvii, has investigated the matter in this light (see pp. 55—58), and he, after remarking a motion of the palpi in connexion with the sound, submitted one of these organs to the microscope, when he found the crescent-shaped excavation on the inner side of the first joint of the palpus that receives the haustellum when coiled or depressed, indurated and

covered with fine furrows, which he compares to the files of certain stridulating *Coleoptera* of the genera *Necrophorus*, *Geotrupes*, and *Cerambyx*, and these he concludes produce the sound when rubbed over the haustellum, which is also furrowed transversely. He adds, the moth will only cease squeaking when these are entirely *eradicated*. The note of the female is deeper, and its lima coarser, than that of the male. He also finds the lima on the palpi of other *Sphingina*:—*Sphinx convolvuli*, *ligustri*, *pinastri*, *Smerinthus tiliæ*, *Deilephila euphorbiæ*, and *Chærocampa Elpenor*, but poorly developed, and capable of producing only slight sounds.

It has been also submitted to my notice (by the Editors) that Linnæus differed slightly from Réaumur in opinion, regarding the manner in which *Atropos* produces the squeak, for he does not say it passes the haustellum over the palpi, but, "*Stridet allidendo palpos ad linguam*" (Syst. Nat. ed. xii, p. 800, 1766—68), and this is the notion I imagine Dr. Landois would endorse. Without hazarding further conjecture on this crucial point, I merely add that, in "good squeakers" I have invariably found a portion of the hair at the outer edge of the basal joint of the palpi worn, and that the sound of the file may, in some slight measure, be re-produced after the death of the insect, by a gentle friction.

Thus it would seem *Acherontia Atropos* is really a stridulator, and yet there remain some phenomena in connexion with this stridulation that need explanation. For instance, when the species of this genus squeak, the two large air-vesicles at the anterior part of the abdomen generally inflate by an unusual spasmodic compression of the posterior segments beneath, and a yellow fan or fascicle of hairs, rising perpendicularly from a fold at either side, emits a pungent scent of jessamine, and expands to a stellate form, which gave rise to the theories of Lorey, Wagner, and Nordmann, lately resuscitated, to account for the stridulation of *Acherontia Satanas* ("Ceylon," by Sir Emerson Tennent, vol. i, p. 264, London, 1860). The former appearance seems also to have led Wagner to conceive air was then forced into the cleft haustellum, which has a double row of orifices at its extremity like the holes of a flute, a circumstance one would think of actual occurrence secondary to the stridor. But the fan itself, well described by Nordmann, may be shown, on the other hand, to be entirely unconnected with the "squeak"—a secondary sexual character it would seem, as I find the little wave moth *Acidalia remutata* carries it expanded during copulation. It also exists on the abdomen (base or anus), or on the 2nd pair of tibiæ in various genera of *Noctuina* (*Leucania*, *Xylophasia*, *Mamestra*, *Phlogo-*

*phora*, *Apamea*, *Catocala*, &c.); on the 3rd pair of tibiæ or fore-wing of various genera of the *Geometrina* (*Boarmia*, *Macaria*, *Iodis*, *Acidalia*, *Cidaria*, &c.); or on the fore-tibiæ and first tarsal joint in the *Deltoides*.\* It is invariably impregnated with an acid secretion, that often stains it orange or black in colour, and diffuses various unctuous odours (as of turpentine, when the imago frequents deal boards or the larva feeds on pine). The death's head moth, in squeaking, at times slightly elevates its abdomen, and depresses its wings, or it lays back its antennæ, whence the theory of Vallot and Johet, confuted by Kirby and Spence (Intr. to Ent., 7th ed., p. 493). It has a favourite sphinx-posture on its four hind legs, with its head raised, is fond of patting, with its fore-feet (suctorial insects "communicate" with the touch of the tarsus or antennæ), and will sometimes run after an object.

I should here mention that the larva of the "death's head" has the power of producing a crackling sound by a testy lateral jerk of the head, due, probably, to muscular contraction (Landois, Ton-und Stimmap. der Insecten, p. 59), and inappropriately termed stridulation by Scopoli (Ent. Carn., p. 185, 1763)†. The motion is observable in many other lepidopterous larvæ, and a group of the caterpillars of *Callimorpha jacobææ* feeding, go through a really remarkable performance of this "head-wagging," when a cloud or passing object intercepts their sunlight. The accompanying crepitation peculiar to *Acherontia*, is nevertheless well attested (Meigen, Syst. Besch. der Europ. Schmet., Leipzig, 1830; Zoologist, 1858, pp. 6212, 6282; Ent. Weekly Intelligencer, vol. iv, p. 196, vol. v, p. 29; Canadian Entomol., vol. i, pp. 40, 47, 48; Trans. Ent. Soc., vol. iv, proceed., p. 157, &c.). The pupa of this "Sphinx," also, like many other pupæ, emits a noise (Ent. Weekly Intel., vol. v, p. 117, vol. vi, p. 91).

Guildford: *January*, 1877.

## NOTES ON THE *TORTRICES* OF PEMBROKESHIRE.

BY C. G. BARRETT.

*Penthina sellana*.—Early in July I found this species flying swiftly in the sunshine, about the face of the cliffs, at Tenby, and settling on stones or rocks. It also flies at sunset.

\* If Mr. Swinton had examined a large general collection of exotic *Lepidoptera*, he might have multiplied instances of the possession of a "fan" in the ♂, and have added to the positions on which it is placed. There does not appear to be the slightest ground for supposing that it has any connection with "stridulation," and its use (whatever it may be) is probably as varied as is its position. Many of the British *Noctuæ* possess it as a basal abdominal appendage, and yet, we remember that, a few years ago, a member brought to the Entomological Society, the ♂ of one of our common *Noctuæ*, as an interesting exhibition, because he had detected this fan. We should like to have further evidence to the effect that it is always "impregnated with an acid secretion."—Eds.

† "*Larva irritata stridens*." Scopoli, l. c.—Eds.

*Peronea Schalleriana*.—More variable than usual. Along with typical specimens are others suffused with greyish-brown, in various proportions, and two of my specimens are entirely purplish-black, only recognizable as this species by the form of the fore-wings, and by the line of raised scales, which indicates the position of the costal blotch. The discal tuft of raised scales, or "button," is, however, brown, and more than usually distinct.

*Peronea comparana* seems to be less common, and not nearly so variable.

*Peronea variegana* frequently occurs suffused with purplish-black.

*Spilonota incarnatana*.—Found in plenty higher up the sand-hills than where I searched in vain for it last year. This is a peculiarly interesting discovery since the form found here is precisely what was wanting, to link together the small varieties which so abound on the Lancashire, Cheshire, and Dublin coasts, with the large rosy form which is found sparingly in Epping Forest and other inland localities. I have before recorded that many years ago I found among the rocks of the Hill of Howth small specimens with dark brown markings; and, on the neighbouring sands of Malahide, specimens also small, but with ochreous-brown markings, rather suffused. This last form also swarms on the Cheshire coast. On the other hand, those from Epping Forest, where it is scarce, are half as large again at least, with blackish-brown markings, and the ground colour clearer, and much more rosy. Now, these Pembrokeshire specimens, taken on high, firm sand-hills, vary in size, from that of the smallest Irish or Cheshire specimens, to fully that of the largest from Epping Forest, these large ones having the ground colour clear and rosy, while some of the small ones are rather suffused. The markings in all are black-brown, sometimes with a purple tinge.

*Sciaphila perterana*.—Plentiful last season, the larvæ feeding commonly in flowers of *Apargia hispida* and *Hypochaeris radicata*, as well as in the ox-eye and common daisies. One larva was found in blossoms of common buttercup, having departed from the usual habit of its species by fastening two flowers together. It fed upon them, and produced a lovely ♀. I have seldom met with any larva more absolutely determined to escape from confinement. Life was utterly unimportant in comparison to liberty. Many crushed themselves flat and died in the attempt, but those which managed to get out, were then perfectly satisfied, and would spin up in the first bit of lino that they came to. The variations of the female in colour are very striking.

*Euchromia purpurana*.—The first seen in the season was sitting on a large leaf in the garden, but before a net could be obtained it was gone. However, by following up a clue obtained last year, I found the species in some numbers in a clover field near the limestone quarries, where it flew freely, from about 7 p.m. till dusk. Some of the most perfect specimens have dull ochreous indications of fasciæ.

*Orthotænia ericetana*.—The value of my discovery of the habit of *purpurana* was not diminished when I found that it was accompanied by this species in plenty, and in most lovely condition. Previously, I have thought myself fortunate if, in the course of a long afternoon's work, I have taken one or two little males, but in this field they were flying in scores, with large velvety females in equal numbers, some specimens varying to a purple-brown. The time of flight, however, was very short, just before dusk, and they would only move on calm, warm evenings.

The clover-field at this time was a lively spot,—the crop in some places had failed, and grass, coltsfoot, and silver-weed were taking its place, and these spots seemed to be the most favoured by the moths, probably because their larvæ had here destroyed the clover roots.

*Halonota Brunnichiana* was a nuisance, flying in the sunshine about the coltsfoot; the pretty little *Stigmonota composana* was at the same time flying over the clover; *Spilodes cinctalis* was ready to spring up whenever disturbed. As the sun declined, *Semasia rufillana* appeared with *Euch. purpurana* (already mentioned). A little later appeared *Xanthosetia hamana* in swarms; then *Orthotænia ericetana*, followed very soon by *O. antiquana*, *Coleophora annulatella*, and occasionally a *Gelechia*, which still remains (I grieve to say) unnamed and undescribed, because, although it is evidently a novelty, no specimen sufficiently perfect could be obtained. Last, and by no means least welcome, when it was nearly dark, on warm, still evenings, three or four *Catoptria expallidana* occurred. *Orthotænia antiquana* is worthy of special notice from the extent of its variations. From the type—pale drab with brown markings—it ranged to pink, with the markings reddish-brown, to entirely reddish-brown, except a dark shade from the base, to glossy dark brown, in which the markings are obscured or obsolete, and to pale drab without the shade of a marking. There was little or no *Stachys* in this field, and it must feed on some other plant also. My impression is, that this and two or three of the other species find the clover roots entirely to their taste. *O. ericetana* and *antiquana* lasted till far into August, and the latter species occurred also, of course, among its usual food-plants—*Stachys sylvatica* and *ambigua*.

*Catoptria cæcimaculana* again occurred in the quarries, especially among knapweed, but not commonly. It has a curious habit in the day time of sitting on bits of grey limestone on the ground, upon which it is hardly possible to distinguish it.

*Catoptria expallidana*, besides in the clover-field, occurred on the railway bank, and in the quarries, but only casually, and supplying no indication of its food-plant or habits, except that of flying when it is hardly possible to see it in the increasing darkness.

*Eupæcilia pallidana*.—Two specimens occurred on a sloping cliff, but in so exposed a place that the wind doubtless prevented it from flying in any numbers.

*Eupæcilia flaviciliana*.—A small *Tortrix*, netted over a sloping bank late at night, and boxed "on suspicion," proved to be this species. Pressing business, and *very pressing* weather prevented it from being further looked for. The capture of this lovely little rarity was an unexpected treat.

Pembroke: *January, 1877.*

#### NOTES ON MR. BUXTON'S EASTERN BUTTERFLIES, WITH DESCRIPTION OF A NEW SPECIES OF *PORITIA*.

BY W. C. HEWITSON, F.L.S.

Mr. E. C. Buxton, who has just returned from a twelve months' hunting excursion in the east, in Sumatra and Java, has brought with him 2000 butterflies, remarkable chiefly in showing how barren those countries are in anything that is new. The collection, nevertheless, contains some fine and rare species and in beautiful condition. Amongst them *Papilio Caunus*, and a fine series of *P. Leucothoe*, the rare *Cyrestis Perianther*, *Eurytela Castelnau*, *Melanitis Penanga* of Westwood, which was not in the Wallace collection, and is quite distinct from my figure of *Penanga* to which Mr. Wallace gave the name of *Sumatrana*. There are two new species of *Amblypodia*, a new *Poritia*, which I describe below, and some fine new species of *Hesperia*.

#### *PORITIA PEDIADA*, *n. sp.*

*Upper-side*: female, dark brown, slightly tinted with dull blue; outer margin of the posterior wing dentate.

*Under-side*: red-brown; both wings crossed transversely by two bands of lilac-white, one near the middle, the other sub-marginal. Posterior wing with a short band of the same colour between the others, and a sub-marginal line of white.

Exp.,  $1\frac{1}{16}$  inch.

*Hab.*: Singapore.

Oatlands, Weybridge: *February, 1877.*



DESCRIPTIONS OF NEW GENERA AND SPECIES OF *GALERUCIDÆ*.

BY JOSEPH S. BALY, F.L.S.

## Sub-Fam. HALTICINÆ.

*ACROCRYPTA PALLIDA*.

*Rotundata, postice vix attenuata, valde convexa, flavo-fulva, nitida, tenuiter punctata, punctis in elytris irregulariter substriatim dispositis; oculis antennisque extrorsum nigris. Long. 2½ lines.*

Hab.: Sumatra; collected by Mr. Wallace.

Head very short, transverse, vertex finely punctured; encarpæ distinct, quadrangular, nearly contiguous at the apex; eyes elongate, their inner border slightly sinuate; antennæ rather longer than the thorax, slightly thickened towards the apex, four outer joints pitchy-black. Thorax nearly three times as broad as long, obliquely bisinuate on either side at the base, medial lobe moderately produced, broadly rounded; sides obliquely converging from the base towards the apex, all the angles broadly rounded. Scutellum elongate-trigonal. Elytra rather broader at the base than the thorax, shoulders distinct, but abruptly rounded, inflexed limb broadly dilated; surface more distinctly punctured than the thorax. Legs short, robust.

*ACROCRYPTA PURPUREA*.

*Rotundata, convexa, metallico-purpurea, capite corporeque subtus piceo tinctis, antennis incrassatis, nigris (articulus ultimus caret); thorace sub-remote punctato; elytris fortiter punctatis. Long. 2½ lin.*

Hab.: Borneo (Sarawak).

Head similarly sculptured to *A. coccinelloides*; antennæ more robust than in that species, the second and third joints slender, ten lower joints black;\* base of jaws and anterior border of labrum rufo-fulvous. Thorax three times as broad as long; basal margin rounded, slightly oblique and faintly bisinuate on either side; sides obliquely converging and slightly rounded from base to apex, hinder angles obtuse, the anterior produced, thickened, very obtuse; disc sub-remotely punctured. Scutellum broad, trigonal. Elytra broader than the thorax, shoulders obsolete, surface rather coarsely punctured; inflexed limb horizontal, slightly concave, its outer edge scarcely produced.

*ACROCRYPTA COCCINELLOIDES*.

*Rotundata, convexa, piceo-nigra, nitida, abdomine fusco-fulvo, piceo tincto, femoribus anticis dorso, tibiisque anticis quatuor intus, piceis; antennis modice incrassatis, nigris, articulo ultimo albido, thorace nigro, tenuiter punctato, lateribus anguste piceis; scutello elytrisque rufis, his distincte punctatis, singulatim maculis nigris, 5, 2, 2, 1 dispositis, ornatis. Long. 2½ lin.*

Hab.: Borneo (Sarawak).

\* I possess three specimens of this species, but in each the antennæ are imperfect.—J. S. B.

Head smooth and shining, vertex very minutely punctured, encarpæ oblique well defined, quadrangular, nearly contiguous at their apices; clypeus smooth, impunctate, trigonate; antennæ longer than the thorax, only moderately thickened, the two lower joints pitchy, the apical one white. Thorax nearly three times as broad as long, basal margin oblique on either side, broadly and obtusely rounded in the middle; sides obliquely converging, hinder angles obtuse, the anterior rounded, thickened; surface remotely punctured. Scutellum large, trigonate. Elytra broader than the thorax, shoulders obsolete; above distinctly punctured, each with five small black spots, two at the base (the outer one close to the scutellum, the other on the humeral cellus), two placed transversely across the middle, and one between the middle and the apex, but rather nearer the latter; inflexed margin concave, its outer edge only slightly produced.

### Sub-Fam. GALERUCINÆ.

#### Genus *XENODA*.

*Corpus elongatum, parallelum, modice convexum. Caput exsertum; antennis articulo basali clavato, incrassato, secundo brevissimo, tertio ad septimum incrassatis, cylindricis, inter se fere æqualibus, conjunctim fusiformibus, octavo brevissimo, in apicem articuli septimi immerso, apice in spinam elongatam acutam producto, tribus ultimis filiformibus, gracilibus, nono longissimo a basi ad apicem leviter incrassato; encarpis trigonatis, contiguis. Thorax transversus, dorso transversim excavatus. Scutellum trigonatum. Elytra thorace latiora, parallela, limbo inflexo, angustissima; dorso rugosa, pube suberectâ sat dense vestita. Pedes graciles, simplices; coxis anticis erectis, fere contiguis; tibiis incrinatis; tarsorum posticorum articulo basali tribus sequentibus fere æquilongo; unguiculis appendiculatis. Prosternum angustissimum, acetabulis anticis apertis.*

This genus, nearly allied to *Ædicerus*, is remarkable for the singular structure of the antennæ in the male; these organs apparently consist of ten joints, the eighth being very long and armed at the base with a slender perpendicular spine, which nearly equals in length the joint itself; on closer examination, however, it will be seen that the antennæ are really eleven-jointed, the body of the true eighth joint (from the outer apex of which springs the slender spine) being very short, and almost entirely concealed in the hollow apex of the seventh. I do not know the female, but that sex probably has simple antennæ as in *Ædicerus*.

#### *XENODA SPINICORNIS.*

*Elongata, parallela, convexa, piceo-fusca, nitida, pedibus antennisque nigris, his articulis duobus ultimis albidis; elytris violaceo-purpureis, rugosis, pube suberectâ subvestitis.*

Long.  $2\frac{1}{2}$  lin.

**Hab. : Sarawak.**

Body clothed beneath with griseous hairs. Head prominent, smooth, impunctate, glabrous, face short. Thorax three times as broad as long, sides straight and parallel, faintly sinuate before the middle, all the angles acute; upper surface transversely convex, transversely excavated on the hinder disc, surface smooth, impunctate, sides very sparingly clothed with a few long, scattered, erect hairs. Scutellum piceous. Elytra broader than the thorax, sub-elongate, the sides parallel, surface coarsely rugose, clothed with sub-erect griseous hairs.

**Genus CARITHECA.**

*Corpus elongatum, modice convexum. Caput exsertum; antennis corpore fere æquilongis ♂, brevioribus ♀, filiformibus, modice robustis, articulis 2<sup>do</sup> et 3<sup>tio</sup> brevissimis, æqualibus; encarpis magnis, subquadratis, contiguis; carinâ lineari; oculis magnis, valde prominentibus, rotundatis. Thorax transversus, dorso transversim excavatus. Scutellum elongato-trigonatum. Elytra thorace latiora, parallela, apice conjunctim rotundata, confuse punctata. Pedes modice robusti, simplices; coxis anticis exsertis, subconicis, apice fere contiguis; tibiis posticis quatuor apice spinâ acutâ armatis; tarsorum posticorum articulo basali tribus sequentibus longitudine fere æquali; unguiculis appendiculatis. Prosternum angustissimum, acetabulis anticis integris.*

**Type—***Carithecra quadripustulata.*

This genus ought to stand near *Haplosomyx*.

**CARITHECA QUADRIPISTULATA.**

*Elongata, parallela, dorso modice convexa, sordide alba, nitida, subtus piceo plus minusve tincta, vertice, antennis (articulis primo et ultimo exceptis), thoracis vittâ latâ, scutelloque nigris, pectore obscure metallico-purpureo; elytris confuse, subfortiter punctatis, singulatim maculis duabus transversim ovatis, unâ ante alterâ pone medium positâ, flavo-albis, ornatis.*

*Long. 4 lin.*

**Hab. : Sumatra.**

Head exserted, face concave between the eyes, vertex very sparingly punctured; joints of antennæ cylindrical, basal joints scarcely thickened, slightly convex; encarpæ well defined. Thorax nearly three times as broad as long; anterior margin concave-emarginate in the middle, obliquely truncate on either side; sides straight and parallel, slightly dilated before the middle, hind angles nearly rectangular, the anterior obtuse; upper surface very slightly convex transversely, coarsely punctured, transversely excavated across the middle, the excavation not extending to the sides, less deeply impressed in the centre. Scutellum trigonate, longer than broad. Elytra broader than the thorax, moderately convex, coarsely and deeply punctured.

## CEROPHYSA WALLACI.

*Elongata, convexa, nigra, nitida, capite thorace pedibusque flavis; elytris metallico-purpureo-violaceis; scutello metallico-cyaneo.*

*Mas: antennarum articulis 6<sup>te</sup> et 7<sup>mo</sup> incrassatis. Long. 2½ lin.*

*Hab.: Sumatra.*

Head smooth, impunctate; encarpæ large, impunctate; antennæ with the first joint curved, second short, moniliform, third and fourth obovate, fifth short turbinate, sixth and seventh swollen, equal in length, eighth short, ninth and tenth rather longer, equal in length, the eleventh ovate, its apex acute; the four upper joints, together with the inner surfaces of the seven lower ones, clothed with stiff erect hairs. Thorax one-third broader than long, sides straight and parallel, rounded and converging at the apex, all the angles rounded; upper surface transversely excavated just behind the middle, shining, nearly impunctate, a few minute punctures only being visible under a lens. Scutellum trigonate, its apex rounded. Elytra narrowly oblong, broader than the thorax, finely granulose, distinctly punctured.

Warwick: February, 1877.

*Occurrence in Britain of Cardiophorus rufipes, Fourc.*—I have great pleasure in being able to record the occurrence in this country of *Cardiophorus rufipes*, Fourc., a single example having been captured by Mr. John Dunsmore in the summer of 1875, by sweeping rank grasses at Corkendale Law (a hill that rises on the table land of the Glenniffer Braes, and surrounded by peaty marshes), the highest peak in Renfrewshire, and about six miles from Paisley.

This example—liberally presented to me by Mr. Dunsmore—was found in company with *Corymbites cupreus*, *æneus*, and *quercus*, &c. *C. rufipes* cannot well be confounded with any other British species; it is smaller than *C. asellus*, shining black in colour, finely pubescent, with the interstices of the elytra convex, and closely and finely punctured, the antennæ entirely black, the femora and tibiæ reddish-testaceous, the tarsi pitchy, with the base of each joint and the claws red, &c.

It is generally distributed throughout Europe, occurring not rarely in France, Germany, Austria, Russia, &c.—G. C. CHAMPION, 274, Walworth Road, London, S.E.: February 9th, 1877.

*Insect-notes from the Sandwich Isles.*—We are getting pretty settled here, and like the country and climate very much, though the heat is very trying, the thermometer now (mid-winter) ranging daily from 80° to 84°. Trying though this be, I think it is, notwithstanding, a great improvement on an English winter to have clear bright skies and sunshine, albeit it is hot. The country is about the most beautiful I ever saw; magnificent mountains, crossed with woods, and dipping right down into the sea, among which are the most charming villages, full of oranges, lemons, cocoa nuts, mangoes, bananas, &c., &c. The profusion of brilliant flowers is most astonishing to anyone unaccustomed to the tropics.

The insect fauna seems very peculiar. *Coleoptera* are distinctly not common. I have only seen about seven or eight species of *Geodephaga*, a single specimen of something near *Tarus*\* (found in the house), a *Bembidium* (one specimen), and a

\* Probably a *Plochionus*.—EDS.

*Tachys* (common) in a salt marsh, and three or four species near *Anchomenus* (I think of the actual genus, others probably *Dyscolus*) occurring, the *Anchomenus* commonly under stones up one mountain (not seen on any other), the rest beaten from leaves of trees in woods on mountain summits. Notwithstanding frequent use of the water-net, I have not yet seen a single species of *Hydradephaga*, but have got two or three *Philhydrida*. *Brachelytra* are a little less rare, among them being what I cannot separate from *Cresophilus maxillosus*. The rest (excepting *Philonthi*) are small *Aleocharida* and *Oxytelida*, *Phlaeocharida* and *Piestida*. *Necrophaga* seem, I think, the prevailing *Coleoptera*, chiefly small, and connected with decaying wood; among them are a few *Epuræ* (?) and *Histerida*. Species near *Carpophilus* are in the greatest number; some of these so remarkably simulate the appearance of *Homalium* that I hardly know which to call them. Probably there are new genera among them. *Lamellicornes*, so far as I have seen, are represented by *Aphodius* and cognate genera only, and in small numbers. *Eucnemida* (only one, a rather nice insect); *Buprestida*, none as yet; *Elaterida*, three or four species,—all very pretty,—one, a magnificent *Chalcolepidius* (?), nearly two inches long; *Malacodermata*, a few *Malthodes* and allied species,—all small; *Bostrychida*, several fine things; a few *Cis*, *Anobium*, &c.; *Heteromera*, a few species near *Helops* and *Heliopathes*, also an *Anthicus*, and my old friends *Tribolium ferrugineum* and *Gnathocerus cornutus*; *Rhynchophora* not very common, only one or two above average size; the rest chiefly *Cryptorhynchida*, *Cossonida*, and *Hylesinida*; *Longicornes*, a few very fine insects; *Prionus*, *Lamia* (the grandest thing I ever met with), *Saperda* (?), *Leptura*, and some others; *Eupoda*, none; *Pseudo-trimera*, a few *Coccinella* and *Scymni*.

There are a good many *Orthoptera*, chiefly earwigs and cockroaches, in considerable variety; a fair number of *Hymenoptera*, including some nasty-looking wasps; too many *Diptera* of the mosquito type; a moderate allowance of *Hemiptera* (some very striking); and many *Lepidoptera* (though I have only seen two species of butterfly—a large *Papilio*, and one which I have identified as *Vanessa kamehameha*, Kotz.). I am collecting insects of all orders in what little time I have.—THOS. BLACKBURN, Honolulu: 30th December, 1876.

*The insects of the American ("Polaris") Arctic Expedition.*—The reports of the scientific results of the *Polaris* expedition have been delayed simply, we are sorry to say, for want of means for publication. Dr. Bessels, the scientist of the expedition, made valuable collections of animal life at *Polaris Bay*, between latitudes 81° 20' and 81° 50' N., and soon after his return placed in the writer's hands the insects and fresh-water crustacea. Now that the English expedition has returned, it is deemed expedient to publish a preliminary notice in order to secure priority. The *Hymenoptera* were represented by *Bombus Kirbyellus*, Curtis, which occurred at *Polaris Bay*, May 31st and July 10th, and a new species, apparently, of an ichneumon fly, *Microgaster Hallii*, found in cocoons at *Polaris Bay* in June and again July 4th.

Of *Lepidoptera*, *Larva Rossii*, a moth closely allied to our *Dasychira*, was obtained in all stages from the egg to the imago. The eggs are spherical, smooth, and white, 0.06 inch long, and laid in a mass of about sixty, and, as in *Orgyia*, upon the cocoon. The larva when half-grown is broad and short, the body, including the hairs, measuring 0.60 inch in length and 0.30 in breadth. The body is densely covered

with long, fine reddish-brown hairs projecting in all directions and concealing the head and end of the body. There are six large, short, dense, subconical tufts, the two anterior and two posterior ones black, the middle ones yellowish. Head and body black. The full-fed larva is a little longer, the head broad and large and black, as is the rest of the body, including all the feet. In this stage the dorsal tufts are all black, with the hindermost one acute, and more prominent than the others; two segments intervene between the fifth and sixth pair. It is 1.60 inch long and 0.60 inch wide.

The cocoon is loose and thin, made of the long hairs of the caterpillar, held together by a thin, fine, silken web. There is an inner layer of hairs held in place by a very slight web. It is grey in colour, and is an inch and a-half long by one inch in diameter.

The two specimens of the moth are male and female, well preserved, and agree with Curtis's description, except that the hind wings are unicolorous, with no "broad, blackish margins."

In the same bottle with the caterpillars of *L. Rossii* occurred a *Tachina* puparium of the usual form and 0.36 inch in length.

Besides this species occurred *Anarta Richardsons* (Curtis) and *Glaucopteryx Sabiniaria* (Curtis) with its larva, already described by the writer in the Monograph on Phalænidae of the United States.

The following Mallophaga have been identified by Mr. S. E. Cassino:—*Physonotomum mystax*, Burm., from *Larus eburneus*; *Dicophorus lari*, Fabr., from *Larus glaucus*; *Goniodes colchica*, Denny, from *Strepsilus interpres*.

A small, blackish Poduran, *Isotoma Besselsii*, occurred in abundance at Polaris Bay, July 5th, 1872. The Arachnida were represented by four species, two of which have been identified by Mr. J. H. Emerton. *Erigone psychrophila*, Thorell, occurred at Polaris Bay, June 3rd, 1872, and there were two unnamed species from Polaris Bay. At Foulke Fiord *Lycosa glacialis*, Thorell, was collected. All the spiders have been sent to Dr. Thorell to report upon. Upon the body of a *Bombus Kirbyellus* occurred several specimens of a *Gamasus*.

Of fresh-water Crustacea, besides a Copepod, *Daphnia rectispina*, Kroyer, occurred abundantly at Polaris Bay August 1st, 1872, as well as *Branchinecta groenlandica*, Verrill.—A. S. PACKARD, Jr.

[The foregoing extract from the "American Naturalist" is, to some extent, complementary to my notes at p. 181, *ante*. Dr. Bessels does not appear to have found any of the Butterflies that figure so conspicuously in Captain Feilden's collections. The *Bombus* found by the latter is probably the known Arctic species. *Glaucopteryx Sabiniaria* is, I believe, one of the Cheimatobioid forms mentioned, but I have had no opportunity of making any critical examination.—R. McLACHLAN].

*On sounds produced by Lepidoptera*.—The emission of a sound by the Death's Head Sphinx (*Acherontia Atropos*) is well known, and the method by which it is produced was established by the thorough investigation of Landois (Die Ton- und Stimm-Apparate der Insekten, pp. 55–59). It is the same as that which Réaumur had long since accepted, namely, that the sound was caused by the friction of the palpi against the haustellum, the latter mostly remaining motionless. The inner surface of the palpi is naked at the base. Microscopic observation of this space,

which to the naked eye appears smooth, shows that it has a great number of fine striae, which, in their structure, have the greatest resemblance to the friction ridges of the *Neorophori*, Dung-beetles and Longicorns. It is remarkable that in the moths the surface rubbed (the violin) is moveable, whilst the bow is represented by a longitudinal ridge at the base of the haustellum.

Landois also discovered a similarly constructed mechanism for producing sound in other *Sphingidæ*. Only some other *Lepidoptera* have the power of making a sound, namely, *Vanessa Io* (Hewitson), *V. urticae* (Greene), *Euprepia matronula* (Czerny), *Chelonia pudica* (Solier), and *Orthosia* (Haldeman), yet it may be supposed that a mechanism for producing sound, similar to that existing in *Acherontia*, may exist in other *Lepidoptera*, and I find, as a fact, in many *Vanessæ*, viewed under the microscope, that there is a very finely sculptured friction-surface at the base of the palpi. This is constructed differently from that of the *Sphingidæ*, and is of a rounder form, but it affords all the conditions for stridulation. I also examined a number of other butterflies, *Bombyces*, *Noctuæ* and *Geometræ*, and found that, except in three species, a friction-surface, well constructed for stridulation, exists at the base of the palpi. The formation, however, is very dissimilar in different genera, and I will hereafter publish the result of my researches in detail. It is thus established as a general principle that a capability to stridulate exists typically among *Lepidoptera*, and that the want of such capability is exceptional. But generally the sound is so faint that our ears cannot perceive it. The object of the stridulation is as yet unknown. The organs of stridulation, e. g. in *Doritis Mnemosyne*, are more developed in the ♂ than in the ♀, but in other species no such difference is perceptible.—O. M. REUTER (in Kraatz's "Entomologische Monatsblätter," vol. i, Berlin, 1876, p. 53).

*Supposed occurrence of a variety of Pyrameis Huntera in England.*—I send you a butterfly which I had in my collection for some time, in hopes it may prove to be *P. Huntera*. The circumstances of its capture were as follows:—In the end of July, or beginning of August, 1871 (when I was just beginning to collect), as I was going home for the holidays with one of my brothers, he drew my attention to a butterfly on the roof inside one of the L. & S. W. R. carriages, shortly after leaving Wokingham station: this insect I always considered a variety of *P. cardui*, until quite lately.—T. D. GIBSON-CARMICHAEL, Castle Craig, Dolphinton, N.B.: *January, 1877.*

[The condition of this specimen induced me to question my observant young correspondent as to the possibility of an error of memory, or confusion with another insect, having occurred. His answers were satisfactory so far; and he stated that he possessed two *P. Huntera* in a case of "British" Butterflies, and that this appeared to differ from them. Upon comparing the example at the British Museum, it turns out to be the Brazilian form of *Huntera*, differing very considerably from the typical N. American insect. My correspondent admits the increased difficulty, but still thinks he has made no mistake. It may be well to remark that the Brazilian Mail Packets come to Southampton, which is on the L. & S. W. Railway.—R. McL.]

*Stray notes on Lepidoptera.*—*Thecla betula*.—I found one ♀ at the end of August sitting on the blossom of a small *Umbellifer*—probably *Pimpinella*, and so

busily investigating every flower as to permit itself to be boxed without the intervention of a net. There must be a station for this species somewhere in the woods which border the upper part of the Haven, but I have not been able to find it.

*Sesia ichneumoniformis*.—Again rather common on *Lotus corniculatus* in the quarries. I noticed several specimens flying over the banks of stones just before sunset.

*Selenia illustraria*.—One specimen occurred in the only good locality for *Geometra* known to me in the neighbourhood—the garden at the back of the house.

*Lobophora viretata*.—Again tolerably common, sitting principally on trunks of sycamore during the day, and flying about bushes for a few minutes from 9 to 9.15 p.m. I found a single larva in the garden, feeding on the cultivated variety of the guelder rose (*Viburnum opulus*), and reared several from the egg on the same plant. I suspect, however, that it also feeds on the sycamore. As far as my observations go, this species is *completely* double-brooded. All my larvæ from eggs laid by females of the spring brood fed up together and *all* the perfect insects appeared in the autumn; and this appears to me the more conclusive because having sent away, to friends who wanted them badly, all the eggs that I could obtain from *early* females, I retained and reared the larvæ from eggs laid by *late* females of the spring brood. Each female, in confinement, lays very few eggs, and with extreme reluctance, although kept in the open air. The duration of the first brood of moths appears to be from about May 6th to June 5th, of the second brood from August 17th to September 7th. The duration, however, must depend on the weather: in this neighbourhood some furious storm of wind and rain usually finishes them.

The garden also produced *Eupithecia virgaureata*, *albipunctata*, and *coronata*.

*Dianthæcia capsophila*.—A larva, found on *Silene maritima* on the coast in June, produced a small specimen in August. This is a new locality for the species, but is unfortunately too far away for night work.—CHAS. G. BARRETT, Pembroke: 17th January, 1877.

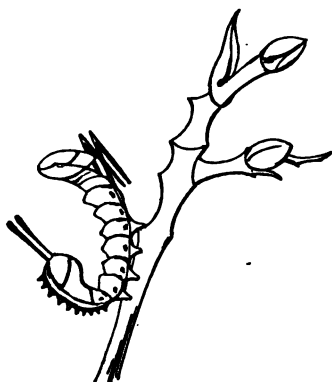
*Metamorphosis of Stauropus fagi*.—Through the kindness of the Rev. Bernard Smith, I had the opportunity last summer of observing the larva of *Stauropus fagi*, and as there appears to be some misconception current as to its habits, I venture to trouble you with a few notes. The larva is curiously economical in the consumption of its food, eating every scrap of a leaf, and generally the stalk also, before attacking a fresh one. The first pair only of the legs are used for grasping or steadying the leaf on which the caterpillar is feeding; the long second and third pairs, which appear to terminate abruptly and without a claw (but I regret to say I did not examine them with a lens as I ought to have done), seemed to be used as crutches or walking-sticks, and perhaps also as feelers, the ends (so to say, the soles, of the feet) being evidently very sensitive. The gait of the larva is crustacean-like, reminding me of the cautious, gingerly way in which many of your readers have no doubt seen *Palinurus quadricornis* stalking about the bottoms of the tanks in the Crystal Palace Aquarium, as if troubled with corns. When teased, the caterpillar strikes out rather viciously with one of its long legs (or, as I have suggested, walking-sticks), and I can imagine them very effective weapons for its protection from a prowling *Ichneumon*.

I had the pleasure of twice watching a larva change its skin; there was not the difficulty I expected from its singular form and varying diameter; the three pairs of



legs were drawn out from the old shells precisely after the manner of a crab or lobster, but with much greater ease, owing to the small amount of contraction at the joints, a few seconds only been needed for the operation. The new legs on emergence are semi-transparent and apparently soft, and are at once folded up against the fore-part of the caterpillar, which then rests for a few minutes, for the purpose, I suppose, of allowing the newly-developed legs to acquire colour and hardness by exposure to the air; in about five minutes they are unfolded, and the work of extricating the body proceeds; the swollen terminal segments offer no difficulty, the old skin seeming to possess great elasticity.

In the December number of Newman's Entomologist, pp. 269—272, Mrs. Golding Bird states that *Stauropus fagi* has two sets of legs at one and the same time; that the two old pairs (why not three pairs?) are cast with the old skin of the body, and that two new pairs are then found doubled up against the sides of the larva. Mrs. Bird offers some elaborate speculations on the sudden transfer of muscular power and connexion with the body from the old legs to the new ones; but I think it is hardly necessary to argue against a theory which, as it appears to me, rests upon a mere error of observation, and which, if true, would make the metamorphosis of *Stauropus fagi* a solitary habit without a



parallel in creation. The hairs and spines of caterpillars are merely dermal appendages, and lie on the surface of what is to be the new skin; but the limbs and other members are in all cases developed inside the old ones, and withdrawn from them in moulting. Mrs. Bird has simply missed the critical moment of withdrawal, and if she had carefully examined the supposed old legs, would have found merely empty shells.

One of my larvæ had lost the whole of the second off fore-leg, except the coxa, when it reached me, also nearly the whole of the caudal horn on the same side; it did not seem to suffer any inconvenience from these losses, and at none of the three subsequent changes of skin which took place was there any renewal of the missing members or increase in the length of the stumps; although no instance of the reproduction of lost parts amongst the *Lepidoptera* has come under my notice, the semi-crustaceous aspect of this caterpillar led me to look for, and almost to expect, something of the sort. Had there been new legs packed away under the skin of the body, as Mrs. Bird supposes, we might certainly have looked for a complete set to be supplied.

When the larva is at rest, the legs are doubled up in front like a carpenter's rule, and the insect, especially when young, closely resembles in colour and outline one of the twigs of beech with unopened buds on which it frequently stations itself. (See Illustration.) When feeding the long legs are protruded, and the anal segments being elevated, its likeness to a great earwig or *Staphylinus* is very striking, and probably may give it some security from the attack of enemies. *Ichneumons* may fail to recognize it as a *Lepidopterous* larva, and other foes may dread the anal

forceps of the earwig, or the jaws and fetid odour of the supposed beetle; but in the absence of observation, I desire to speak doubtfully of the sharp eyes of a bird or *Ichneumon* being deceived when engaged in its own special business by any such colourable imitation.

I should be glad if some naturalist, skilled in the application of the theory of natural selection, would suggest how the anomalous structure of the larva may have been developed or retained, and also to know whether the larva of any other Lepidopterous insect is known to possess similarly jointed legs. The perfect *Stauropus fagi* does not, so far as I know, differ in structure from ordinary Lepidopterous forms, or show any traces of its strangely-constructed antecedent.—EDWIN BIRCHALL, Douglas: *January, 1877.*

*Natural History of Catocala promissa.*—On August 26th, 1875, Mr. J. Ross of Bathampton, most kindly sent me thirty-nine eggs of this species, being the whole produce from six imprisoned ♀ moths captured by him in the New Forest on August 2nd, and with them the permission to select some for myself.

The eggs had been laid from the 9th to the 16th of the month, some on oak bark, the others extruded through the interstices of the lino covering of their cage to which they adhered; they were of two different colours, and I contented myself with choosing three of each, and returning the remainder to Mr. Ross, from whom I afterwards heard they all proved sterile.

The egg of *promissa* is of a good size, of a rather flattened spherical figure, a little depressed in the upper centre and much more beneath, the shell covered with coarse, projecting, sinuated ribs, varying from fourteen to eighteen in number, so close together as almost to hide the surface between them, the depressed spot in the centre of the top coarsely reticulated; when fertile, it is of a dull drab colour, and so continues through the winter, but, as I found, when sterile, it is dark brown, and eventually shrivels up.

About the middle of April, 1876, while looking at the three drab coloured eggs, I fancied two of them seemed rather more plump than before, and a close examination proved this to be the case, as a little of the smooth shell had become visible between the rough ribs, and the upper central hollow nearly filled up; this last, on the 18th, was completely rounded over, and the ribs were turning paler; on the 20th, they had become whitish, and the interstices greenish-drab colour; and on the morning of the 21st, I found one larva was hatched; the dull, whitish, empty shell showed a large hole in the side, through which the larva had escaped; the next morning I saw a second had hatched. At this time, none of the oak-buds had burst, nor were many much swollen, but I picked open two or three at a time of the best to be found, for the young larvæ to feed on—Mr. Ross also, at this juncture, kindly supplying me with a few tender oak leaves which he had contrived to force out,—but, in placing this food in the cage, I noticed one of the larvæ when put on the leaves swing away from them by a thread, and though I replaced it before shutting the cage, yet it must have again swung out, for at that moment I unconsciously lost it; however, next morning (the 25th) I was somewhat consoled at seeing the third was hatched, and so I again had two young larvæ to watch. Curiously enough, neither of them seemed to care then for the leaves, but chose the buds and those containing blossoms in preference, feeding only after dark, and resting all day stretched out at full length.

motionless, belly upwards on the muslin cover of the cage, a habit continued through all stages of growth, the moulting included, a process which invariably occurred at night, in that position, as proved by the cast skin next morning adhering to the muslin with all the legs spread out to their full extent.

No doubt, in a state of nature, the larva passes the daylight in this quiescent position, probably on the under surface of horizontal or sloping twigs or branches of the oak, where it would be in shadow, and would assimilate wonderfully well to the more or less lichen-covered surface on which it would be closely pressed, and would be in a great measure safe from the prying eyes of birds, and, I may add, of entomologists, for I remember no recorded instance of its having been found at large by any who have collected in that favourite hunting ground, the New Forest.

The newly-hatched larva was three-sixteenths of an inch long, with largish head and slender body, stoutest at the 9th and 10th segments, the first two pairs of ventral legs quite rudimentary, the 3rd and 4th pairs conspicuously developed, and also the anal pair; its mode of progression was precisely similar to that of a geometer; the colour of the head black, of the body a light drab, broadly banded with dark brownish-grey across most of the segments, with fine pale double longitudinal lines along the sides, and with two pairs of black dots and bristles on the back of each segment: after the first moult, the dark bands disappeared, and the colouring was light greenish-grey, the dorsal line showed as darker and then a lighter spear-shaped mark on each segment; the pale twin-like sub-dorsal lines still remained, and below them a blackish blotch on the side of each segment: after the second moult, at the end of a fortnight, the larva was five-eighths of an inch in length, and of stouter character, having an elevated ridge on the back of the 9th and 12th segments, the anterior pairs of ventral legs now first in use for walking over the food by night; the colouring very lichenous in appearance, no lines on the sides, but large and conspicuous whitish blotches on the 5th, and 8th, and 9th segments, the elevated ridge darker grey than the rest: in another week, when the length of seven-eighths of an inch was attained, a whitish narrow streak appeared over the crown of the head, and the ridge on the 9th segment became black, the rest of the body light greenish-grey with paler blotches as before; on the 16th of May, one of the two larvæ fixed itself for a moult, but died on the 19th, unable to complete the operation. Meanwhile, the remaining larva thrived well, and, by the 21st, had become one inch and three-eighths in length, the growth being rapid now, the colouring much as before, very lichenous in appearance: the last moult occurred during the night of the 23rd, and, the next morning, I found it measure one inch and three-quarters in length, the general colouring a rather greener-grey than at any previous stage, even the whitish blotches were now faintly tinged with greenish-ochreous: on the 26th, it had reached its full-growth, when I took its third portrait, and a full description which follows presently; on the 28th, it was shortening evidently, although continuing to feed at night till the 30th, when it had decreased considerably, and was irritable at the least disturbance, and on the 31st, it retired amidst some sprays of oak, and entered a little way into some light soil beneath, where it formed a cocoon composed chiefly of small particles of dry stalks and roots with peat earth, and lined, as I afterwards found, with coarse, whitish silk, disposed in very large meshes, yet smooth enough; the upper surface being just level with the surrounding soil, and partly attached to a stone I had placed there. The moth, a female, appeared on the 24th of July.

The full-grown larva is two inches and one-eighth in length, the body thickest at the 9th and 10th segments, tapering from thence a little gradually to the head, and a little more to the anal extremity; the head rises a little on the crown, where the lobes are slightly defined, and is flattish in front; there is a prominent ridge having a triangular hump on the back of the ninth segment, and a slight elevation occurs near the end of the 12th, bearing the hinder pair of tubercles more sharply prominent than the rest; the back is rounded, the belly flattened. at the junction of the two surfaces just above the legs is a fringe of fleshy filaments, more or less branched, though a few simple ones occur amongst them; the anterior pairs of tubercular warts on the back are small and unobtrusive, while the hinder pairs, and the single row along each side, are rather large and bluntly pyramidal, every one having a fine bristle; the anterior and ventral legs extend laterally, at right angles to the body, the anal pair also at an obtuse angle backwards, the third ventral pair long, and the fourth pair longest. The ground colour is a light greenish-grey, with a distinct, large, pale patch of faint ochreous-greenish on the sides and back of the 5th, another on the 9th, and on the 10th less and less pale, strongly contrasted towards the division by a sooty transverse irregular band extending down either side from the blackish hump on the 9th to the back of the leg, from whence it spreads behind, at first broadly, then slants off to a point on the lower side of the 10th, the end of the 12th segment is a little darkened: the head is light greenish-grey, reticulated with darker grey, a transverse streak of black reticulation over the crown extends to the mouth, defining the boundary of the face, behind this a shorter black streak marks the back of the cheeks, the face itself is whitish, with a dark greyish streak on either side downwards to the mouth; the thoracic segments are very much covered with freckles of lightish grey, dark grey and black, some of them so disposed as to faintly indicate dorsal and sub-dorsal double lines, on the 5th the back, though pale in front, is clouded behind, while on the 6th, 7th, 8th, and all beyond the 9th, it is rather uniformly covered with fine greenish-grey freckles, forming on each somewhat of a truncated diamond shape, each successively growing paler, from the 6th to the end of the 8th, these diamonds are relieved by the hinder pairs of whitish prominent warts, more or less ringed at their base with dark grey or black, from these proceed backward to the segmental division short, dark greyish double lines rather convergent, most strongly defined on the 5th, 11th, 12th, and 13th; along the sides, from the end of each segment, is a broad-based, somewhat wedge shape, of the paler ground, flanked below by the lateral whitish wart, from whence a pale sinuous streak ascends a little obliquely forwards, finely and sharply edged below with black like the wart itself, the dull red oval spiracle, outlined with black, comes close beneath in front of the wart; the rest of the side is freckled to about the same appearance as the back; the fleshy filaments are pearly-white; the anterior legs pale and ringed with dark greenish-grey; the two first ventral pairs are whitish-grey; the third and fourth pairs greyish in front, darker greenish-grey behind, bearing a few black freckles, the anal pair similar: the belly is whitish, with a conspicuous blackish mark on the middle of each segment, viz.: a transverse bar between each pair of the anterior legs, a largish round spot on the 5th and 6th segments, a very much larger spot on the 7th, 8th, 9th, and 10th, on these two last they are elongated transversely to a diamond shape, the spot is round on the 11th, 12th, and 13th, each smaller in the order mentioned; the skin of the head, back, and sides, a little rough, the belly smoother, the filaments smooth.

The pupa is nearly an inch in length, by five-sixteenths in diameter across the thorax, which is rounded and sloping smoothly to the head in a convex curve; behind on the back of the abdomen is a slight depression, the wing-covers smooth, and from them the abdomen is full, but soon tapers rather sharply to the tip, which is rough and furnished with several converging, curled-topped spines; the colour of the skin is purplish-brown, the abdominal divisions dingy red; though this local colouring can only be seen on parts that happen to be rubbed, as the surface generally is covered with a fine opaque powdery bluish bloom, a few short, fine, light brown, bristly hairs, pointing behind, are sparingly distributed over the abdomen.—WILLIAM BUCKLER, Emsworth: *December 2nd*, 1876.

*Description of the larva of Pterophorus lithodactylus.*—The larva from which I took down my notes was received, amongst some of those of *Ebulea crocealis*, feeding on *Inula dysenterica*, from Mr. W. H. Grigg, of Bristol, June 15, 1875. It was full-grown, five-eighths of an inch in length, and of average bulk in proportion. Head globular and polished, smaller than the second segment, into which it can be partially withdrawn. Body of nearly uniform width throughout, but tapering slightly towards the posterior extremity; it was clothed rather thickly with short hairs. Ground colour bright yellowish-green; head pale green, the mandibles brown; throughout the entire length of the dorsal area is a broad pink stripe, edged on each side with a narrower purplish one, which is again edged with a fine whitish line. Ventral surface uniformly pale green. The hairs on the dorsal area are dark brown, those on the sides whitish. The pupa is so similar in appearance to the larva, that it had actually been in that stage several days before I found out the fact. I noticed, as I fancied, the larva on the upper side of a leaf, motionless, I supposed changing its skin, and was not a little surprised, on examining it closely, to discover it had become a pupa. The markings and almost the shape had assumed the same character as the larva, but the broad purple dorsal stripe was gone, and replaced by a series of pale green lozenge-shaped marks, connected at the abdominal divisions; the sub-dorsal region dull purple; wing-cases pale green, with several purplish streaks; under-side of abdomen pale green: like the larva also, thickly clothed on the dorsal surface with short, whitish hairs. The imago appeared on the 12th of July.—Geo. T. PORRITT, Highroyd House, Huddersfield: *February 3rd*, 1877.

*The economy of Laccometopus clavicornis, Lin.*—Upon this subject (giving the name of the insect as *Eurycera clavicornis*) M. Ed. André, of Beaune, writes as follows in the "Feuille des jeunes Naturalistes," for January last:—"This Hemipteron lives in the interior of the flower-buds of *Teucrium chamaedrys*, which grow and develop almost normally up to the time when they should open, but the final evolution is prevented by the insect having soldered the anthers of the stamens to the petals, by means of a black, glutinous matter, derived either from itself, or from the pollen transformed by the agency of the insect. The petals being thus unable to open, the corolla becomes a close chamber, the capacity of which, in consequence of the presence of the foreign body, becomes of larger proportions than is natural. The insect undergoes its changes under this shelter, and, in August, when it has assumed the perfect state, escapes by separating the margins of the petals, which, at the sides, are only contiguous and do not adhere, to fulfil the functions

that remain for it to accomplish before it dies. Each flower contains but one insect; and on opening one in August, besides the perfect Hemipteron, the skin of the pupa is found. The insect always has its head turned towards the base of the flower. By collecting the flowers that are inflated in the form of a sac, and unopened, a very large number of the insect may be obtained, which it would be much more difficult to capture by means of a net or cloth."

"This habitat is very summarily indicated by Amyot (*Méthode mononymique*, No. 294, *Mephisse*), and by Fieber, who says that it is in the interstices between the swollen leaves and the flowers of *Teucrium chamædrys*."

To this I would add that Réaumur, more than a century ago (*Mémoires*, iii, 513, pl. 34, fig. 1—6), described and figured this insect, its "nymphé," and the flowers of *T. chamædrys* swollen and unable to open in consequence of the inquiline, to which, however, he does not give a name.

Geoffroy (*Hist. Ins.*, i, 461, 56) refers to Réaumur, and confirms his account, saying that the larva of this bug, which he calls "La punaise tigre," lives in the interior of the flowers of "chamædrys," which appear larger and more swollen than ordinary, when they contain the insect.

Herr von Frauentfeld (*Verhandl. z.-b. Ges. Wien*, iii, Sitz.-bericht, p. 157, *et seq.*) describes *Lacometopus clavicornis*, Lin., and *L. teucris*, Host, confirming the previous authors, and showing the differences of the insects and their economy. *L. teucris* he found on the flowers of *Teucrium montanum* growing near Mödling.

The genus *Eurycera*, Laporte, to which *Cimex clavicornis*, Lin., is referred by M. André, is long anterior to *Lacometopus*, Fieber, but the name was rejected by the latter author (*Entomologische Monographien*, p. 21, 1844), on account of its previous employment by Dejean, for a genus of *Coleoptera*.

I have adverted to the subject, and cited M. André's account of the economy of *L. clavicornis*, because it contains some interesting details not given by previous authors, chiefly in the hope that the species, which is distributed throughout Europe, and is common in France, may be re-discovered in this country. It is given as British by Stephens, in his "Catalogue," and by Walker, in his "List of British Hemiptera," but in each case the authority for saying it is a native is unknown, no authentic specimens, as far as I know, being in any collection. *Teucrium chamædrys* is a rare plant in Britain, found chiefly on old walls, and I believe specially in the northern counties of England; but the localities are doubtless known to, and may be learned from, local botanists.—J. W. DOUGLAS, Lee: 19th January, 1877.

*On mounting Typhlocybida*.—Finding it impossible satisfactorily to examine certain *Typhlocybida*, especially those of the *rosa* type, when carded in the ordinary way, I have adopted the following method:—Having carded the insects in the ordinary manner, and allowed them to get thoroughly dry, I take two ordinary glass microscope-slides, clean them, and, a few minutes before I am ready to operate, put on the one which is to be the lower, six or eight small patches of gum, at equal distances along the length of the slide, just large enough to hold the *body* of the insect securely; I then proceed, by the aid of a setting needle applied underneath the legs, elytra, and wings, to carefully raise each insect from the card, and place its body in a patch of gum on the slide, and, having filled the slide, put it away for a few hours, secure from dust, to allow the gum to set. I next cut, in one pi

frame of cardboard, about one-eighth of an inch wide, and the exact size of the slide, and, having gummed under each insect a small disc of paper bearing its No. in the Locality Register, I place the frame on the slide, and over all put the other slide, and bind with a thin paper edging, and when dry, clean and apply a coating or two of sealing wax varnish to render the slides dust and mite proof. In the matter of arrangement I proceed as follows:—To facilitate reference, each slide has a distinctive number, and the contents of each separate slide are numbered progressively. The drawer devoted to the *Typhlocybidæ* is racked, after the manner of a microscope-slide cabinet, and, just beneath the glass, a piece of cartridge-paper is fitted, ruled and labelled like an ordinary cabinet drawer minus the specimens, and, in the space where, under ordinary circumstances, the insects would be pinned, are inserted numbers, the upper one referring to the number of the slide, and the lower one to the number of the insect on that slide. Thus, in the space allotted to *Typhlocyba quercus* are the figures  $\frac{2}{5}$ ,  $\frac{5}{5}$ , which indicate that a specimen of that insect is to be found, No. 4 on slide No. 6, and No. 2 on slide No. 5, and so on. It is obvious from the foregoing that there is no necessity for separating species before putting them on the slides. No doubt a microscopist could suggest many improvements, but I find the plan described above answer every useful purpose, as the insects can be held up to the light to see the neuration of the wings, &c., the under-side is visible without any extra trouble, and the slides, wrapped in a piece of paper, may be carried in the pocket for examination at any opportunity with very little risk of damage to the insects. To anyone whose stock of available daylight, especially at this period of the year, is as limited as my own, this last is no mean advantage.—JAMES EDWARDS, Lane's Buildings, St. Faith's Lane, Norwich: December 12th, 1876.

[Although this method of mounting *Typhlocybidæ* has the disadvantage of preventing the examination of the genitalia from the side, it serves admirably for affording a view of the under-side of the body, and the neuration of the elytra and wings, both of which in species that are green or colourless, and in others that are generally similar to each other, such as *rosæ* and *alneti*, are points of the first importance. The method, suitable either for the microscope or lens, and applicable also to the *Psyllidæ*, will be a valuable adjunct to the cabinet, although, for the reason above stated, it will not supersede the ordinary method of preservation.

The Rev. T. A. Marshall recommended sticking the wings of *Typhlocybidæ* upon thin glass, by means of water, for temporary examination (E. M. M. iii, 198), and by putting examples in this way on a microscope-slide, and fastening over them a piece of thin glass, I have rendered them of permanent service. I think that by a modification of the plan, specimens of entire insects may be prepared for placing in the cabinet. A hole, of diameter somewhat greater than the expanse of the insect, should be punched in a piece of thick card (of which the size may easily be determined), under which a piece of thin glass, somewhat smaller than the card, should be fastened with gummed paper at the sides; in the receptacle thus formed the insect, previously set out, is to be fixed, and another piece of thin glass fastened over it; then, a pin being put through the card, it would be fit for the cabinet.—J. W. D.]

## Review.

MONOGRAPH OF THE BRITISH APHIDES. Vol. I. By GEORGE BOWDLER BUCKTON, F.R.S., F.L.S., F.C.S. London: Ray Society, 1876. pp. 193, and 45 plates.

The Aphides, on account of the wonderful peculiarities of their natural

history generally, have engaged the attention of many of the most acute and philosophical naturalists during the last century, and they have also been much studied by describers and classifiers. Yet, although on the one hand we, in this country, can cite the labours of Owen, Newport, and Huxley, and on the other of Westwood, Curtis, and Walker, there existed no one work in English which presented a general view of the Family or descriptions of the British species.

Mr. Buckton has devoted many years of assiduous attention to the Aphides, and gives the result of his labours in the present work, which, however, is somewhat erroneously termed a "Monograph of the British Aphides," since it enumerates only those species that have come under his notice in the living state. It contains—

"1st.—A Terminology, which includes the general anatomy.

"2nd.—A Bibliography, containing a *résumé* of the most noticeable work of the early authors.

"3rd.—A Life-history, which includes the metamorphoses of Aphides, supplemented by a brief statement of the views of more recent investigators, with reference to their reproductive economy.

"4th.—A Diagnosis of such species as have come under my notice in a living state, each species being illustrated by coloured figures representing the larval, pupal, alate, and where possible the sexual forms.

"5th.—A description of the principal organs connected with the reproduction of Aphides, coupled with short remarks upon the morphology of the family."

Fifty-three species, some of which are deemed to be new, are figured on forty-two plates; and there are three plates of anatomical details. All the figures, made from life under the microscope, have been excellently lithographed by the author, and it is a great merit that they are not too highly coloured. The usual marking of the natural size is however, omitted. We notice, in the anatomical portion of the work, that *prothorax* and *pronotum* are used as equivalent terms, and the same with regard to *mesothorax* and *mesonotum*, and *metathorax* and *metanotum*; whereas, in each case, the first term signifies the entire segment, and the second the superior portion of it only. In the descriptive portion of the work only the name of the author of the genera and species is given, without any citation of the name and page of the work where the description occurs,—a serious deficiency for those workers who come after, entailing upon them an immense amount of labour which should have been rendered unnecessary. Neither are there any directions as to the capture of, or the best or any method of preserving, *Aphides*;—the want of any satisfactory mode of doing the latter having hitherto, doubtless, had a large share in deterring those who would otherwise have collected such fragile creatures: possibly some such plan as that mentioned at page 237 *ante* might prove effectual. Nevertheless, English entomologists (especially those who care for anything more than making a collection) should be grateful to the author for having so well placed before them the result of the investigations of the best naturalists, distributed as they are in several languages throughout voluminous works, and we trust his labours may prove an incentive to collect and study the too much neglected Aphides.

The work was originally intended to be comprised in one volume, but it has been found necessary to divide it into two or three. We hope that the last volume will contain an enumeration with diagnoses of the native species not seen by the author and not cited as synonyms, with a reference in full to the works wherein they have been described.

---

ENTOMOLOGICAL SOCIETY OF LONDON: *January 17th, 1877.*—ANNIVERSARY MEETING.—Sir S. S. SAUNDERS, Vice-President in the Chair.

A letter was read from the President stating that, owing to a slight accident, he



was unable to attend the Meeting, and the reading of his Address was therefore postponed. The following were elected Members of the Council for 1877, viz.:—Messrs. Bates, Champion, Dunning, Douglas, Grut, Meldola, E. Saunders, Stainton, Weir, Prof. Westwood, Sir S. Saunders, the Rev. A. E. Eaton, and T. A. Marshall. The following Officers were elected, viz.:—Prof. Westwood, President; Mr. J. J. Weir, Treasurer; Rev. T. A. Marshall, Librarian; and Messrs. Grut and Meldola, Secretaries.

February 7th, 1877, Professor WESTWOOD, President, in the Chair.

The President nominated Messrs. J. W. Douglas, J. W. Dunning, and H. T. Stainton, Vice-Presidents for the year; after which he proceeded to read extracts from the Address he had prepared for the Anniversary Meeting.

Mr. Bond exhibited another example of *Danaïs Archippus* taken in England, near Haywards' Heath, Sussex, by Mr. Alford Wood in the second week of September last.

Professor Westwood exhibited an example of the beautiful and curious butterfly *Bhutanitis Lidderdalii*, Atkinson, from Bhootan.

The President remarked that Baron Osten-Sacken had directed his attention to a paper by the late B. D. Walsh, in the Proc. Boston Soc. Nat. Hist., in which it was related that he had bred a Dipteron from a cocoon of *Limacodes hyalinus*, which Dipteron proved to be the common North American species of *Systropus* (*S. macer*, Loew); and referring to Professor Westwood's remarks in his paper on the genus *Systropus* in the last part of the Transactions, in which he had stated that *S. crudelis* was bred from a cocoon in Natal, having a resemblance to that of *Limacodes*—he considered it a remarkable instance of community of habit among insects of the same genus in such distant parts of the globe. The Professor had also been informed by M. Ernest Olivier, of Moulins, who had recently visited Pompeii, that he had observed large numbers of *Bombylii* flying in company with a bee of which he had forwarded a specimen—but this proved to be an *Anthophora*, and not an *Andrena* like those described by him in his paper in the last part of the Transactions (Notæ Dipterologicae, No. 1).

Mr. McLachlan exhibited an extraordinary case of a Lepidopterous larva from Zanzibar, sent by Dr. Kirk, who had found it on *Mimosa*. It was probably allied to *Psyche* and *Oiketicus*, and was in the form of a flattened *Helix*, half-an-inch in diameter, formed apparently of a kind of *papier maché*, with a smooth whitish outside coating.

Mr. C. O. Waterhouse exhibited curious varieties of the following British *Lepidoptera*:—*Agrotis exclamationis*, *Chrysophanus phleas*, and *Polyommatus Adonis* and *Alexis*.

Dr. F. Buchanan White forwarded an extract from the "Medical Examiner" of 21st December last, containing an account by Dr. Tilbury Fox of an extraordinary case of "Pruritus" which infested every member of a family and household, including even the dog and cat. A specimen of the creature had been submitted to Dr. Cobbold, who had pronounced it to be a species of *Trombidium*—and it was believed by Dr. Fox to have originated from certain plants in the garden, and that the cat and dog who appeared to have been the first affected were agents in conveying the parasite to the human members of the family.

The following papers were read, viz.:—

Notes on the African *Saturniids* in the collection of the Royal Dublin Society, by W. F. Kirby.

Descriptions of new genera and species of Phytophagous Beetles, belonging to the Family *Cryptocephalidae*, together with diagnoses and remarks on previously described genera, by Joseph S. Baly, F.L.S.

Descriptions of new species of Phytophagous Beetles belonging to the Family *Eumolpidae*, and a monograph of the genus *Eumolpus*, by Joseph S. Baly, F.L.S.

DESCRIPTIONS OF HYMENOPTERA FROM SPITZBERGEN,  
COLLECTED BY THE REV. A. E. EATON.

BY THE REV. T. A. MARSHALL, M.A., F.L.S.

The following five species (of which four are new) were described by me some time ago, at the request of the captor; but the descriptions having been mislaid by him, it has become necessary to repeat them. They are written so as to be in conformity with Holmgren's Monographs. The insects are not remarkable, except as being a sample of the Arctic Fauna, and containing among them a form of *Orthocentrus* with the wings imperfectly developed.

MESOLIUS, Holmgr.

MESOLIUS ARCTOPHYLAX, n. sp.

*Nitidulus*; clypeo apice subdepresso, truncato vel levissime emarginato; area supero-media angusta, triangulari; postero-media distincta; segmento 1<sup>o</sup> planiusculo, basin versus sensim angustato et (cum dimidio segmenti 2<sup>di</sup>) coriaceo, carinulis distinctis; spiraculis ante medium sitis; alarum nervo transverso anali infra medium fracto; areola nulla —; niger, ore, clypeo, palpis, faciei maculis 2 interdum ♂, alarum squamulis, segmentorum marginibus infra et lateribus, cum plicis ventrali, flavidis; pedibus rufis, trochanteribus ex parte nigris, tibiis tarsisque posticis nigris; alarum stigmate fusco.

♂ ♀. Long. 3½—4 lin.

Belongs to Holmgren's Sec. II, Div. I, A, b, β, †, \*\*, Spp. 31—41. Head not wider than the thorax, scarcely narrowed behind the eyes, alutaceous; face, clypeus and palpi with pale hairs; one ♂ has two triangular yellow patches on the face; head not buccated; teeth of the mandibles brownish. Antennæ black, nearly as long as the body; first joint of the flagellum half as long as the second, the third longer than the fourth. Mesothorax trilobate, the furrows distinct. Metathorax sub-rugulose; supero-median area very narrow, elongate; postico-median area cordiform; the lateral areæ sub-distinct. Abdomen ovato-lanceolate, with short white hairs towards the apex. Terebra slightly exserted. Wings hyaline.

July 18th, 1873. East side of Wide Bay. Four specimens.

BASSUS, Fab.

BASSUS HYPERBOREUS, n. sp.

*Nitidulus*, punctulatus; metathoracis area supero-media minuta, postero-media ampla; abdominis segmento 1<sup>o</sup> subquadrato, scabriculo, carinis fere ad apicem extensis; alarum nervo transverso anali infra medium fracto —; niger, ore, clypeo, faciei macula, orbitis internis, antennis subtus, alarum squamulis, pedibus anticis cum coxis, flavidis; femorum posteriorum basi rufescente; tibiis posticis annulo ante basin flavo.

Var. *Coxis anticis nigris*.

♂. Long. 2½ lin.

Belongs to Holmgren's Sec. II, A (?), α, γ. Clypeus margined

with a raised line at the base. Mandibles black, yellow in the middle. Abdomen sub-cylindrical, segments 1—3 with the anterior half scariculous.

July 19th, 1873. East side of Wide Bay. Three specimens.

### ORTHOCENTRUS, Gr.

#### ORTHOCENTRUS REPTILIS, n. sp.

*Nitidus, impunctatus, fronte et facie leviusculis; abdominis segmentis inter se distincte separatis; segmento primo apice et lateribus striolato, carinulis obsoletis; secundo latitudine longiore, apice (cum sequentibus) fortiter compresso; septimo brevi; terebra vix exserta. Alarum stigma mediocre; nervus radialis externus in-crassatus, incurvatus; areola deficiens; nervus transversus analis obsoletus; ala imperfecta, abdomine multo breviores. Metathoracis area supero- et postero-media confusæ; cæteræ nullæ. Antennarum articulis tertius sub-quadratus—. Niger, pedibus piceo-testaceis, femoribus coxisque posticis validis. ♀. Long. 1 lin. (vix).*

Belongs to Holmgren's Sec. I, Div. II, Subd. 2, A, Spp. 21—35. The shortness of the wings, which are unfit for flight, distinguishes this species from all others of the genus. In one of the two specimens preserved, the wings are altogether torn off, in the other they are in their natural state.

July 31st, 1873. Loom Bay. Two specimens, one in bad condition.

### MESOCHORUS, Gr.

#### MESOCHORUS DOLOROSUS, n. sp.

*Segmentum 1<sup>um</sup> abdominis apice levissimum; unguiculi tarsorum inermes; facies latitudine longior (Holmgr. Sec. I, D, a). Nitidulus, punctulatus, niger; ore, clypei apice, palpis, alarum stigmatæ, segmenti 2<sup>di</sup> margine postico, pedibusque, fusco-testaceis; plica ventrali flava. ♀. Long. 2½ lin.*

Head scarcely narrowed behind the eyes, pubescent; face sub-quadrangle, punctate, cheeks not buccated; antennæ a little shorter than the body, attenuated towards the apex. Thorax not narrower than the head, pubescent; superior area of the metathorax five, distinct. Abdomen smooth, glabrous; the first segment curved, wide (for the genus), the medial channel distinct; the second longer than its breadth; terebra less than one-third of the length of the first segment. The radial nerve slightly bent at its apex; the transverse internal cubital nerve interstitial; the anal transverse nerve straight; areolet large, receiving the recurrent nervure very little before the middle.

August 2nd, 1873. Hecla Cove. Six specimens.

### ICHNEUTES, Nees.

ICHNEUTES REUNITOR, Nees, Mag. Ges. Berl., 1816, p. 276, pl. 7, f. 3, &c.

Eight individuals from Hecla Cove, taken on the same day as the preceding. They belong to Wesmael's species *I. brevis*, which is supposed to be a small variety of *reunitor*. Both forms are occasionally found in England.

Belsize Park Gardens, N.W.:  
February, 1877.

*Lepidoptera captured during an Excursion to Switzerland and the Italian Lakes.*—The following list of *Lepidoptera*, observed by myself and a friend (Mr. M. J. Michael, of St. John's College, Cambridge), during a short trip in Switzerland and the Italian Lakes last summer, may be of interest to entomologists who have collected on similar occasions, as showing how much (or, rather, how little) can be done in entomology on a tour where this is not the only object. When in company with non-entomological friends (we were in all a party of four) a great deal of collecting has to be done on the sly, as it were,—I mean by resorting to such expedients as walking up hills when travelling along the roads; and by these means a number of additional species were procured, though sometimes perhaps at the expense of the time of the less interested members of the party. Unfortunately, the time for departure from England (about the middle of August) coincided with the setting in all over Western Europe of the spell of bad weather which prevailed for about a month continuously; and this, combined with the lateness of the season, no doubt much contributed to the lack of species observed, and the entire absence of some usually common, *e.g.* *Daphidice*, *Palæno*, &c. It also entirely frustrated our intention of visiting Zermatt, where we had intended to have spent some days collecting the insects of the high Alps. The total number of species observed in the month was 107, of which 33 are not British species. For naming some of these I am indebted to Dr. Staudinger, whose nomenclature I have throughout followed.

#### LIST OF SPECIES OBSERVED.

*Papilio Podalirius*—seen near Colico. *Papilio Machaon*—Colico, Bellaggio, Menaggio. *Parnassius Apollo*—one ♀ specimen at rest on thistles near Andeer. *Pieris brassica*, *rapæ*, *napi*—everywhere in cultivated grounds. *Leucophasia sinapis*—common in the gardens of the Villa Serbelloni and elsewhere at Bellaggio; also at Menaggio and Pallanza. *Colias Hyale* occurred nearly everywhere, and usually commoner than the next. *C. Edusa*—with the last. The *var. Helice* occurred at Bellaggio and Menaggio, but not commonly. *Rhodocera rhamni*—Villa Serbelloni and Pallanza. *Polyommatus virgaurea*—one ♂ specimen near the village of Splügen. *P. Dorilis*—Baden; common at Bellaggio and Pallanza. In this species the ♂ is quite dark above, the ♀ having the primaries orange with dark spots, and an orange border to secondaries. *P. Phlæas*—Baden, Bellaggio, Pallanza. The Italian specimens have the markings less distinct, the copper colour redder, the spots smaller, the costal margin of the primaries darker, and the marginal band broader and narrower than any English examples I have. The under-side too, of the primaries, is redder, leaving the circumscriptions of the eyes and the veins of the wings paler. *Lycæna Argiades*.—This little "tailed" blue occurred, but not commonly, at Baden and Bellaggio. *L. argyrotoxus* (*Egon*)—Colico and Bellaggio, in the grounds of the Villa Serbelloni. *L. Astrarche* (*Agestis*)—Bellaggio.\* *L. Icarus*—Baden, Kandersteg, Colico, Menaggio, Bellaggio. *L. bellargus* (*Adonis*)—Kanderthal, Chur, Bellaggio, Menaggio, Val Vedro. The *var. Ceronus*—(which also occurs in England)—at Bellaggio. *L. Corydon*—Kanderthal, Chur, Menaggio, Val Vedro. Two ♂ Swiss specimens have all the black points on the under-side of the wings much smaller and less distinct than in English ones; in one also the row of

\* The Bellaggio specimens have both the red and black spots on the wings larger, and the ground colour of the under-side greyer than in English specimens.

orange spots on the post-margin of the under-side of the secondaries has almost disappeared. *L. Damon*—Kandersteg, Chur. *Apatura Ilia*. The *ab. Clytie*, which differs from the type in having the ground colour of all the wings reddish-ochreous instead of white, occurred commonly on the poplars lining the road between Chiavenna and Colico. This species flies strongly, but does not soar like *A. Iris*, and sits on the leaves sunning itself till disturbed, but generally too high to be in reach of an ordinary net. The females have much less metallic gloss than the males. *Limenitis Camilla*—in the gardens of the Hotel Grande Bretagne at Bellaggio, but not at all common: one specimen also in those of the Villa Serbelloni and Menaggio. *Vanessa Io*—near Tiefenkasten. *V. Atalanta*—Colico, Bellaggio, and Menaggio. *V. cardui*—Bellaggio. *V. Antiopa*.—We only saw one of this species throughout our trip, and that was at Sargans, on the railway from Zurich to Chur. *V. c-album*—Bellaggio and Villa Serbelloni. *Melitæ Athalia*—Menaggio and Bellaggio, in meadows. *M. Parthenie*—Baden. *M. didyma*.—This species was not uncommon on the railway banks near Waldshut, and a timely delay of the train enabled us to get out of the carriage and procure some specimens before it started off again. *Argynnis Dia*—Baden and the Via Mala. *A. Paphia*—Baden, Colico, Bellaggio, Menaggio, and the Val Vedro. The *var. valezina* also occurred at the two last-named localities. *A. Adippe*, *var. Cleodoza*—Bellaggio and Val Vedro. *A. Niobe*, *var. Eris*—near Splügen: also at Pallanza. *A. Lathonia*—common at Baden; also at Bellaggio and near Tiefenkasten. *Melanargia Galathea*—a worn specimen in the Val Vedro, and another on the hill behind Bellaggio. *Erebia Stygna*—Kanderthal, near Frutigen, in meadows at about 2,500 feet elevation; also on a rocky wooded hill behind Bellaggio. *E. Nerine*—a single ♂ specimen of this rather rare species near Splügen. *Erebia Pronoë*, *var. Pitko*—This handsome species was rather common in sloping, dry meadows, between Frutigen and Kandersteg, at about 3,000 feet elevation, but difficult to get in good condition.\* *E. æthiops (Blandina)*—Thun; common in the valley of the Kander, and on a hill behind Bellaggio. *E. Ligea*—near Splügen. *Satyrus Hermione*—Colico, Menaggio, and Bellaggio; frequented a rocky wooded hill behind the latter, and seemed to like resting in shady places. On the wing somewhat resembles a large *L. Sibylla*. *S. Circe*—A specimen of this handsome species was seen at Baden. *S. dryas (Phædra)*—This fine species was abundant at Bellaggio, frequenting, like *S. Hermione*, a rocky, bushy hill behind the town, wheeling in its flight over the bushes, the roughness of the ground making it a matter of some difficulty to catch specimens. The female is larger and lighter in colour than the male; has the blue eyes on the primaries larger, and with brighter blue pupils than in that sex, and is altogether a finer-looking insect. It also occurred at Menaggio, where it frequented the flowers of the millet (*Milium effusum*), which is grown in the vineyards in patches between the rows of vines, at Pallanza and near Colico. *S. Actæa*, *var. Cordula*—with the last, at Bellaggio and Menaggio, but much less common. *S. Semele*—Menaggio and Bellaggio. *Pararge Hiera*—Villa Serbelloni, at Bellaggio, Menaggio, and Val Vedro. *P. Egeria*—Bellaggio, Menaggio. I think those I saw belonged to the pale northern form *Egerides*, but not having kept specimens cannot say for certain. *P. Janira*—Baden, Colico, Menaggio, Bellaggio.

\* The *var. Pitko* has the red bands nearly obliterated.

*P. Tithonus*—Bellaggio, Menaggio, and Pallanza. *Cænonympha Pamphilus*—Baden, Bellaggio, Menaggio, and Val Vedro. *Spilothyrus alcea*—Bellaggio. *Syriothus Alocus*—Baden, Bellaggio, and Menaggio. *S. Proto*—gardens of the Villa Serbelloni, at Bellaggio. *Hesperia comma*—everywhere: on the whole, the commonest butterfly, as far as regards our experiences. *Sphinx convolvuli*—gardens at Schaffhausen and Thun. *Macroglossa stellatarum*—common in gardens at all places visited, except in the Alpine valleys. *Zygana filipendula*—Baden, and near Chur. *Lithosia deplana*—one at Thun. *Callimorpha Hera*—Via Mala; common at Bellaggio and Menaggio, fluttering about flowers in the sunshine like a butterfly. *Cossus ligniperda*—a full-grown larva picked up in the Via Mala, and an empty pupa case near Liuno. *Bombyx rubi*—larvæ common, crawling in the roads, near Chur, Splügen, and in the Val Vedro. *B. trifolii*—a ♂ specimen picked up in the road near Menaggio. *Agrotis c-nigrum*—Thun. *Plusia triplasia*—Bellaggio. *P. gamma*—Schaffhausen, Bellaggio. *Catocala paranympa*—a single worn specimen in the inn "Belle Vue" at Frutigen. *Acidalia perocharia*—common in meadows near Baden, and in the Kanderthal, near Frutigen. *A. immorata*—Baden. *A. immutata*—Bellaggio. *A. strigilaria*—common at Pallanza, on grassy slopes near the lake. *A. ornata*—common at most places we visited, but not in the Alpine valleys. *Timandra ornata*—Schaffhausen, Liuno. *Numeria capreolaria*—one specimen near Chur. *Gnophos glaucinaria*—one specimen near Chur. *G. dilucidaria*—Baden, Bellaggio. *Ortholitha limitata (mensuraria)*—Chur. *O. bipunctaria*—Chur; larger and darker than English (chalk) specimens. *Minoa murinata (euphorbiata)*—Pallanza. *Anaitis plagiata*—Baden, Schaffhausen. *Lygris populata*—common in fir woods, at about 4,500-foot elevation, near Splügen. Some specimens marked with dark, but I saw none of the *var. musauaria*. *Cidaria variata*—two on the Merkur-Berg, near Baden. *C. ferrugata*—Schaffhausen. *C. cæsiata*—in company with *L. populata*, as in Scotland. *C. flavicinctata*—one specimen in the hotel at Splügen. *C. verberata*—common in all the Alpine valleys we passed through. *C. bilineata*—Baden, Schaffhausen, Chur, Liuno. *Eupithecia euphrasiata*—one specimen on a hill behind Bellaggio. *Rivula sericealis*—Bellaggio. *Hypena obesalis*—a specimen near Andeer. *H. obsitalis*—common in passages amongst vineyards, near Bellaggio. *Botys purpuralis*—meadows at Bellaggio. *B. cespitalis*—Baden. *B. nubilalis (lupulinalis)*—one specimen at Bellaggio. *B. lutealis*—near the waterfall on the Splügen. *Eurycreon verticalis*—Schaffhausen. *Pionea forficaris*—Baden. *Diasemia litterata*.—This pretty little species was common at Bellaggio, flying gently in the sunshine just above the top of the grass, in grass and clover-covered meadows, in the neighbourhood of vineyards, &c. *Crambus tristellus*—Baden, Bellaggio. *C. culmellus*—Baden, Bellaggio. *C. perllellus*—Chur, Bellaggio. *C. geniculeus*—Bellaggio. *Pempelia semirubella (carnella)*—common at Bellaggio and Menaggio, in places like those frequented by *litterata*. The *var. sanguinella* (with pale costa) also occurred. *Myelois rosella*—one specimen of this pretty little species at Menaggio. *Sericoris conchana*—Baden. *Depressaria Heydeni*—some pupæ picked up from moss under stones whilst searching for *Coleoptera*, on the Splügen, near the top of the pass (at about 6,500 feet), produced this species, for naming which, as well as the last, I am indebted to Mr. E. Meyrick, of Trinity College, Cambridge.—W. A. FORBES, West Wickham, Kent: January 17th, 1877.

*Notes on Light, as a means of attracting Lepidoptera.*—The following notes are not intended as an essay on the subject, but are published simply in the hopes of inducing entomologists in various parts of the country to try, during the coming season, a method of collecting, which at present is far from receiving the attention it deserves. I could have wished to make them more complete, by waiting another year, during which I hope to make a trial of a more powerful light—the magnesium—which has, I understand, been applied to this purpose by Mr. Thornthwaite, with startling success; but enough has been done to show that with ordinary lamps, and at a cost within the means of all, grand results may be achieved, and I am anxious that another season should not pass without a more general experiment. Considering how long it has been known that moths are attracted by light, and how much has been done by collecting the insects that come to stationary lamps, it is strange that so few should have attempted to take the light to the insects. Of course, there is no originality in the idea, and that such a method of capture is feasible, is, doubtless, generally known, but I think it is *not* generally known how great the results of such work sometimes are, nor how many species, formerly of excessive rarity in our collections, may be taken almost with certainty in this way.

In September, 1872, I made my first attempt by taking to one of the Norfolk Broads a paraffine lamp, “warranted to burn in the open air.” The night was dark and warm, but very windy, and, need I say, the “warranted” lamp alternately flared, smoked, and went out: moreover, only one solitary moth was rash enough to leave the shelter of the thick reed-beds to reward the attempt. First impressions are often lasting, and had that moth been a “common beast,” very probably I might not have been eager to try again; but as luck would have it, it was a fine specimen of *Nonagria cannae*, at that time quite new to my collection, and always a great rarity, at least in Norfolk. After this I tried that lamp several times within the month, but always with the same result, as far as the behaviour of the lamp went, and always without result, in the shape of rarities. That winter I manufactured a huge contrivance, hexagonal in form, to carry six colza lamps with reflectors, the whole hoisting on a pole. The first opportunity for trying it occurred in June, 1873, when, in company with my friend Mr. C. G. Barrett, I embarked (lamp and all) for a two days’ cruise among the Norfolk Fens. The first night, at Ranworth, a thick fog came on, and nothing was to be seen; the lamp attracted, however, two *N. siccae*, and a few *P. lignata*. Next day was wet and dull, and the evening still threatened rain, but was free from fog. We worked along the shores of Barton Broad, hoisting the lamp about 10 p.m. The first moth to turn up was *Meliana flammea*, and, though nothing else of that character put in an appearance, we found the night lively enough with swarms of *C. phragmitellus* and *P. lignata*, with a fair sprinkling of *C. giganteus* and *mucronellus*. During the year I tried the lamp twice more in Norfolk, and several times at Wicken Fen, Cambridgeshire, always with good success. Next year, 1874, I introduced some further improvements into the lamp, but retained its style intrinsically the same; during July and August of that season, I was staying within six miles of Wicken Fen, and was therefore enabled to work this locality with some degree of regularity, and without that, very little can be done towards exploring a collecting ground. One good night is worth weeks of average weather, and only by constant work, while living on the spot, can these opportunities be ensured. The labour was very severe, and many a time, after walking over at dusk and working

till dawn, perhaps in drenching rain, I have been scarcely able to drag myself home, without an hour or two's sleep in the fen—a dangerous luxury in wet clothes,—but then the sport was proportionate. Two nights in particular, July 10th and 11th, the weather being just perfection, *i. e.*, oppressively close, and the sky black with clouds, from which thunder and at intervals a drop or two of rain descended, were to me times never to be forgotten. Standing beneath the lamp, its rays made a circle of light amidst the surrounding blackness, and this circle was apparently closed in with a hovering cloud of moths—I am sure that I do not exaggerate when I say they were in tens of thousands; to select under such circumstances was impossible, and every dash of the net among the swarms that from time to time came close up to the light, produced a mingled assemblage of captives, that made boxing a difficult matter, for often two or three would crowd into the pill-box. Sometimes this was varied by the sudden bang of a *M. arundinis* against the glass, followed by a buzzing as it fell among the grass and rushes, or the noisy dashing about of *G. quercifolia*; but the *tout ensemble* produced an impression, the very recollection of which calls up a thrill of excitement.

Altogether, my diary shows a total of 300 insects, belonging to 34 species, for the 10th, and among the species are *M. arundinis*, *N. ciliaris*, and *B. uliginosana*; while the record for the next night falls not far below, and even surpasses it, in the matter of *N. ciliaris*, of which I obtained no less than 10 specimens. When I mention that I have *never* since then seen more than two in one night, and that only once, and that the insect does not appear to fly at all, unless the evening be just to its taste, the above success becomes even more remarkable.

At the close of this season I made an alteration in the lamp:—having found that paraffine lamps will burn well enough even in a hurricane, when enclosed in a glass case, fitting perfectly tight at sides and bottom (*i. e.*, without any air-holes) and with perforated zinc top, I substituted this for the colza, obtaining a far steadier and brighter light, and one that required no attention.

In 1875 I was too much occupied to collect, but getting out for a night in November, was rewarded by taking *Nonagria lutosa*, and the second brood of *B. uliginosana*, including a finely streaked form. Last year I added to my stock of lamps a small one, made to pack up into a portable form, and whose weight was not too great to be carried strapped on the back (the colza apparatus weighed 60lbs.); this enabled me to try the method in fresh localities, *e. g.*, a large wood near Norwich, where *A. alni* headed the list of victims, and in July, after some labour, Mr. N. M. Richardson and myself established it on a summit of a Perthshire mountain, where it proved fatal to *Pachnobia alpina*.

I must confess that for wood collecting light has not in my experience proved such a success as in the fens, where it simply eclipses all other methods of capture for a large number of the rarer species; still, the few times I have been able to try it in large woods show clearly that it is a method which should assuredly not be neglected. The one grand merit of it is that *all* classes of *Lepidoptera* (except *Diurni*) seem alike to be attracted by it; and the *Bombyces*, *Geometrae*, *Pseudo-Bombyces*, and *Pyrales*—for which we have no other special method of capture—are to the full as headstrong in coming to light as the *Noctuae*—perhaps more so. The apparatus which I now use is simply a square case glazed all round (two opposite sides opening as doors), say one foot square and fourteen inches high, with a wooden



bottom and wire gauze top, and a cylinder of tin fitted up the middle, through which I can pass a pole to hoist it. This carries four meteor paraffine burners, and will show a splendid light for an oil lamp. The smaller one has two burners only, and takes to pieces, packing up into a space of 12 inches by 8 by 5. With this strapped on my back, I am able twice or thrice a week in the summer time to spin over on my bicycle to Ranworth or Barton, or some other of the Norfolk Fens or woods, enjoy a delightful night's work till two a.m., snatch a couple of hours' sleep in a boat—a reed stack in the fens—or some convenient cottage, and ride home to business in the early morning. Of course this is too laborious to be regularly done—two successive nights always knock me up; and I am anxious that the method should be fairly tried by some one whose leisure or situation permits him to do so with less labour than it costs me. I am quite convinced that any of the *Bombyces* or *Deltoides* which, though they can be assigned to definite localities, e.g., *G. ilicifolia* in Cannock Chase, or *Madopa salicalis* in the woods of Surrey, are yet rare from our ignorance of how to catch them, might be certainly obtained by patient trial of this plan.

I cannot conclude these notes without some allusion to the three brighter lights—Electric, Magnesium, and Oxy-Hydrogen lime light. It might naturally be expected that these more powerful means would be proportionately more productive of insects, and Mr. Thornthwaite has shown this to be the case. Hitherto I have not tried them myself, chiefly on account of the cost of maintaining any of these, and the weight of apparatus required, certainly for the first and last, and will therefore not trespass on the ground of another. I have, however, said enough I hope to convince beginners (and it is of course for their benefit that I write) that they will do well to add this to their other ways of collecting. I can only add that I shall at any time be most happy to render any assistance I can to those who wish to try it.—F. D. WHEELER, Norwich: *March 14th*, 1877.

*Description of the larva of Axylia putris.*—In the summer of 1875, Mr. Owen Wilson, of Carmarthen, found a ♀ imago of this species amongst lettuce. As it deposited eggs, he tried the young larvæ on the above-named plant, to which they took with evident relish. At the end of July, he kindly forwarded half-a-dozen of them to me, when I found they had already attained a length of three-quarters of an inch. They grew rapidly, and, by August 9th, were nearly an inch and a half long, and rather plump. The head has the lobes rounded, but is rather flat on the face, it is narrower than the 2nd segment, into which it can be partially withdrawn. Body of nearly uniform width, but rather sharply attenuated from the 4th segment to the head; the 13th segment also small, and rounded off rather bluntly; each segment has a transverse dorsal ridge. Segmental divisions deeply cut, dividing the body into distinct sections; skin soft.

Ground colour dingy, dirty brown, strongly varied with equally dull, dark green; head highly polished, dark brown. A dark green pulsating vessel forms the medio-dorsal stripe, and a fine, undulating, yellow line the sub-dorsal; there is a dull pinkish band along the spiracular region, becoming, however, dull yellow and wider from the 10th segment to the base of the anal prolegs: on the sub-dorsal region is a series of oblique yellow marks, edged above with dull green, the green edging

forming wedge-shaped marks, that on the 11th segment being much darker than the others; there is also a distinct yellow spot, situate on the medio-dorsal line, on the posterior of each segment; spiracles very minute, greyish-pink.

Ventral surface dull greyish-green, irrorated with brown; the legs have their bases smoke coloured.

By the middle of the month, all the larvæ had disappeared beneath the surface of the earth in their cage.—GEO. T. PORRITT, Highroyd House, Huddersfield: *March 6th*, 1877.

*Description of the larva of Lobophora hexapterata.*—For several years I had been keeping by me a description of the larva of this species, taken from specimens beaten by myself, or sent to me by friends at various times, but it was not until 1875 that I was enabled, by the kindness of Mr. A. H. Jones, to describe the egg also. I received some eggs on May 30th; the larvæ hatched on June 1st, were full-grown in about four weeks, and spun up during the first week of July; captured larvæ usually spun up a week or so later. I am convinced from experience that aspen, *Populus tremula*, is the food, and though the larva will, for a time, eat other species of poplar, it will not thrive on them.

The egg is broadly oval in outline, flattened, and laid on its side; the shell shining, and covered all over with delicate hexagonal reticulations; the colour at first pale green, afterwards whitish. The young larva is at first pale dull white all over, afterwards becoming greenish. When full-fed, the larva is about three-quarters of an inch long, its figure rather stout, of even bulk, cylindrical, but showing to the eye as if almost squared; this appearance seems to be caused, first, by the absence of a dorsal line, for the pulsating dorsal vessel is scarcely to be seen without a lens, and so the eye catches the sub-dorsal line as forming the edge of a flat back; and secondly, by the habitual position of the larva, which, when at rest, contrives to lie perfectly flat on the surface of a leaf, somewhat in the fashion of those species which spin leaves together, though in this case I have never detected any spinning whatever; the lobes of the head are horny, and well-defined, the hinder segments taper a little, and there are two short anal points; the skin is somewhat wrinkled; the ground-colour is pale yellowish-green; the head dull pale green with small black ocelli, the mouth reddish-brown; the sub-dorsal line (the only ornamentation) is pale yellow, below it the side is more yellowish-green in tint than the back; the spiracles very indistinct, pale yellow; the belly whitish-green; the segmental folds yellowish when the larva is at rest, when it is in motion they appear green; the anal points pinkish-white; altogether this is a very dull looking larva, having so little variety of colour. When spinning, it makes a neat cocoon, three-eighths of an inch long, and just half as wide, compactly woven of dark silk, with fine grains of earth, &c., stuck over it; the pupa is five-sixteenths of an inch long, cylindrical, the eyes prominent, the abdomen about one-third of the length and tapering off in a curve, and ending in a bifid spike; the colour on the thorax and wings very dark greenish, on the abdomen deep reddish-brown; the skin rather glossy.—J. HEVLINS, Exeter: *12th January*, 1877.

*The Stack Rocks.*—On July 18th, we started early in the afternoon for a drive along a range of rocky coast six or seven miles away, to view the sea-birds in their breeding-places on the Stack and other rocks. On the road my attention was attracted by small *Tortrices* hugging the hedge-side, and alighting, I was surprised

to find<sup>1</sup> that *Eupacilia rupicola*, taking advantage of the warm still sunshine was flying commonly over the *Eupatorium cannabinum* on the bank. By the time that the patience of my companions was nearly exhausted, I had secured a score of decent specimens, and had made the far more important capture of a specimen of *Opadia funebrana*, which was sitting on a bramble-leaf under some blackthorn bushes. It is the first and only time that I have seen this species at liberty, and the specimen is larger than those usually reared.

A few miles further, the road lay through some fields, and a corner of luxuriant weeds, among which *Stachys sylvatica* was prominent, attracted my attention. In a very few minutes *Ebulea stachydalis* was disturbed, and, in spite of their cowering and creeping close to the ground, nine specimens were secured.

On arriving at the coast the sea-birds claimed all our attention. The "Stacks," three in number—detached and inaccessible, but overlooked by the cliffs—had their broad sloping or flattish summits absolutely covered with guillemots and razorbills (both locally called elligooks, elligoos, or elligugs,—for the orthography like the etymology is obscure), and formed a wonderful sight, every inch of space being apparently occupied. (I grieve to say that the largest rock with its countless birds sitting erect, has been irreverently compared—by a young lady of course—to a *pincushion*).

Below the flatter surface and shelves of rock occupied by the "elligooks," every chink and cranny was taken possession of by one or two of the pretty little kittywake gulls, from the roundness of their heads looking as they sat like a host of owls. All around, the sea was alive with hundreds of birds swimming, diving, and flying to and from the rocks. The cliffs themselves, composed of mountain limestone, several hundred feet in perpendicular height, rough, jagged, and worn by the eternal beat of the waves and the terrible winter storms, had every available shelf occupied by the larger common gulls, while swarms of predatory daws and crows rested in the holes. While I waited to allow the young folks to go round to a different point where a finer view of the bird-covered rocks could be obtained, I was highly gratified to see a beautiful Cornish chough alight within twenty yards, showing its red legs and beak to great advantage. A little further on we were disappointed to find a rocky pinnacle, upon which I had previously seen a Peregrine falcon sitting on her nest, deserted, and although several of these fine hawks had flown around a week or two before, not one was seen on this occasion. Beyond this was a tremendous chasm where a portion of the inner rock had given way—undermined by the sea—leaving a massive arch of rock, beneath which the waves roared and tumbled. In this protected spot *Asplenium marinum*, *Limbarda crithmoides*, *Crithmum maritimum*, and other sea-side plants were growing luxuriantly, and on shelves above the archway the kittywake gulls were setting near enough to toss a biscuit upon them. When disturbed, they merely flew round and round the chasm, and settled again.

Passing along the coast, headland after headland was occupied, more or less, by the larger gulls on the higher shelves of the precipices, and the guillemots and razorbills along the rocky ledges above high water mark, but in greatly diminished numbers.

In the meantime we had seen very few *Lepidoptera*. *Satyrus Semele* was common of course on the rocky slopes, but hardly any other day flying species seems able to exist on these bare downs and storm-beaten crags. An exception must be

made, however, in favour of *Herbula cespitalis* which kept flitting about in the sunshine wherever a hollow provided a little shelter from the breeze. This species could hardly have claimed attention but for the unusually large size and bright colouring of the specimens: the males varying from reddish-ochreous and red-brown with pale olive bands (far brighter when alive than when pinned and set) to the usual dull colour, while the females were almost bright enough for *Pyrausta*. Consequently it became necessary to secure some, not always an easy task between bright sunshine and strong wind, but the difficulty changed its character when the wind fell at 8 p.m., for we then witnessed the most extraordinary sight of the kind that has ever come under my observation. *Cespitalis* then begun its evening flight, and at every step *actual clouds* of them started up and flew around us. I say clouds, for no other term expresses the numbers. They all flew at the same level, a few inches above the short turf, reminding one, as they skimmed away in every direction, of vast flocks of sheep fleeing in masses from the foot of an intruder. In fact, it is difficult to convey the impression given by such countless multitudes flying all in precisely the same manner,—it must be seen to be appreciated.

A month later, a young friend came down from London, and we again spent an afternoon along the cliffs; but we came almost too late for the birds, the vast hosts of "elligooks" had gone away to sea, but the sides of the Stack Rocks were still occupied by the kittiwakes, and peeping carefully over into one of the chasms, we saw what looked like a strange and most lovely species of small gull, which turned out, on further observation, to be the young of the kittiwake full-grown and fledged, and probably nearly ready to accompany its parents in their approaching period of homeless wanderings.

The lower slopes of the inaccessible Stack Rocks were visibly covered with the tree mallow (*Lavatera arborea*) in full bloom, and the cliffs even bright with blooming *Limbaria crithmoides*, and other rock-plants; but again *Lepidoptera* were very scarce. We had previously beaten out a few small insects in the lanes—*Scopula lutealis* commonly, *Brachytania semifusca*, *Peronea Schalleriana*, and *Semasia populana*, among the willows,—but nothing remarkable, and now the rocks bade fair to be even less productive. However, a momentary glimpse of a silvery bar across velvety black wings awakened interest, since I had never before found *Emmochia cingulalis* at home, and we commenced a systematic investigation. It was hard, however, to find the little beauty's favourite haunt, and when at last discovered it could hardly be considered satisfactory. Just where the sloping slippery grass reached the ragged edge of the tremendous precipice, was where *cingulalis* loved to rest and flit about, and catching it amounted to sport with a decided spice of danger. But again sunset favoured us. We had passed along to an awful chasm, long and narrow, almost meeting at its outer end, but with a sheer wall of perpendicular rock on each side, and called, from a local tradition, the Hunter's Leap. Along the edge of this chasm, and flying out over it, was *cingulalis* in some plenty, and to get it we were obliged to creep down a smooth slope and cling with one hand to the herbage while making random sweeps of the net along the edge with the other, each sweep bringing in perhaps two or three caught flying or sitting on the thrift and other overhanging plants. It was dangerous work, but we secured some of the most lovely specimens I ever saw, two or three of the females having the second yellowish fascia (near the base of the fore-wings) strongly marked. So attractive were they, that before we had explored the Hermit's Cell, at St. Govins, and its miraculous well, the dusk was coming on, and driving clear of the blocks of limestone, with which the track (called a road) is profusely studded, became a work of absorbing interest.—

CHAS. G. BARRETT, Pembroke: 15th December, 1876.

*On a peculiar form of variation in Tortrices.*—The sight of a beautiful variety of one of our very common *Tortrices*, sent for examination by Mr. W. Prest, of York, and taken near that city, induces me to make a few observations upon a peculiar phase of variation which seems to be confined to the *Tortrices*—and, perhaps, to certain families in the group,—and not to any single species or genus.

It consists in the total obliteration of the *usual* markings of the species, which are replaced by cloudy markings of different form and position on a white or cream coloured ground. This phase of variation (or albinism) appears to be most frequent in *Penthina cynosbatella*, L. (*variegana*, H.), and forms the variety, *nubiferana*, Haw., Steph., but described by them as a *distinct species*. Stephens (simply translating Haworth) describes it :—"Anterior-wings bone-white with an irregular black streak from the base to the middle, extending along the costa; in the middle of the disc are two rounded deep black spots; on the middle of the inner margin is another dark streak, and one near the apex also towards the inner margin." Wilkinson, however, describes *nubiferana* :—"Anterior-wings dirty white with indistinct and undefined dusky clouds from the base to beyond the middle; the costa destitute of markings; at two-thirds from the base and one-third from the dorsal margin is a largish cloudy fuscous spot." And he asks whether it should not be restored to the rank of a species.

These two descriptions do not appear to agree very well, but this arises from the fact that in this variety there is variation. Of two specimens in my collection, one, taken near Pembroke in 1875, agrees accurately with Haworth's description, the other, taken some years ago in Surrey, is more cloudy, and comes very near to the form described by Wilkinson. That both are varieties of *Penthina cynosbatella*, L., admits, I think, of no doubt. When, therefore, Mr. Prest sent me a moth similar in size and colour to one of these, I returned it without hesitation as *cynosbatella*, var., but when he sent it again with another moth in the company of which it was taken—this other being obviously one of the pale ordinary forms of *Halonota Brunnichiana*,—and I was thereby induced to examine it more carefully, I found from the shape of the fore- and hind-wings, and the very dark colour of the hind-wings, that it was actually a variety of *H. Brunnichiana*, corresponding in a wonderful manner to the variety *nubiferana* of *cynosbatella*. There is no trace of the ordinary *Brunnichiana* markings on the fore-wings, which are bone-white, with the costal portion, from the base to the middle clouded with grey, a cloudy grey elbowed line towards the apex, and another cloudy line below it.

This recalls similar instances to memory. Among my *Sericoris littoralis*, taken near Dublin, sixteen years ago, are two specimens exhibiting similar characteristics. The fore-wings are whitish, with cloudy indications of fasciæ which are *not* placed in the positions occupied by the ordinary markings of the insect.

Some time ago, a specimen was sent me for identification, which, from the form of its fore-wings, I believe to have been *Phoxopteryx unguicella*, but, from its being an albino of the same character, with no indication of the position of the usual markings, it was impossible to decide with any certainty on its species.

Lastly, I took, some years ago, by the side of a country road near Haalemere, a *Tortrix* which has never been named, and probably never will be. From the form of the fore-wings, it may be a *Phlaeodes* or *Grapholitha*, but of what species I can-

not even give an opinion. It is also an albino, but not so pale as those already mentioned, having oblique, fascia-form, cloudy markings.

The most striking feature in this phase of variation—or what might be called the *nubiferana*-form of each species—is, that such markings as are found bear no relation whatever to the normal markings of the species to which they belong, and in this it differs from albinism, as observed in other groups of *Lepidoptera*, while the specimens, although differing so greatly in size and form, bear a curious resemblance to each other, and the variation seems to be confined to the anterior-wings.

Dr. Wocke quotes *nubiferana*, Steph., as an aberration of *Penthina scriptana*, H. (*Brachytania Hartmanniana*, L.), from which I judge that he has seen a similar variation in that species, but he ignores Haworth's description of *nubiferana* entirely, being probably puzzled by a reference in Haworth to *Sciaphila Wahlbomiana*, to which the insect does not bear the faintest resemblance. 'There is a chalky-white variety of *Sciaphila perterana*, Gn., found at Folkestone, among the ordinary forms, but it is devoid of any marking whatever, and can hardly have caused the confusion.

Now that the *nubiferana*-form of variation has been noticed in five species, belonging apparently to as many genera, it will be interesting to ascertain how much further it extends, and any information on the subject will be acceptable.—ID.: 3rd March, 1877.

*Acherontia Atropos in the North of Scotland*.—Having observed a notice of the occurrence of *A. Atropos* at Wick, I beg to inform Mr. Sandison that I have a specimen in my collection which was taken at Keiss, some years ago, resting on the sail of a vessel. It is a good specimen, and measures 4½ inches across the wings.

There is a northern specimen of *A. Atropos* in the Banff Museum, possibly the one mentioned in Smiles's "Life of a Scotch Naturalist," as Mr. Edward was Curator of the Museum when I saw the specimen there, and he used, I believe, himself to fill gaps in the Collection.

*A. Atropos* has also occurred several times at Banchory, in Aberdeenshire; but the specimens in any case I have heard of have been smaller than is usual farther south.—L. DUNBAR, Wick, Caithness: 9th March, 1877.

*The Colorado Beetle*.—*Doryphora decemlineata* having been discovered in a living state at Bremen upon goods imported from New York, and having also been seen at other places in Germany, the Commissioners of Customs have issued an order to all ports that the precautions already directed to be observed (*vide* p. 181 *ante*) are to be exercised in the examination of potatoes brought from Bremen or any other German port:—a further endeavour to insure that no potato-beetle shall be passed without receiving the official stamp. But will *Doryphora* come with potatoes only?—J. W. DOUGLAS, Lee: 14th March, 1877.

*Precocious appearance of Melolontha vulgaris*.—At the Meeting of the Belgian Entomological Society, held on 3rd February, 1877, M. Weyers exhibited a living ♀ of *Melolontha vulgaris*, from Paris, which the mild weather had tempted out. M. Delamain (Bull. Soc. Ent. France, 1875, p. xli) has recorded this insect on the wing in the middle of January, at Jarnac, Charente.

*The House-Ant at Stockport.*—I enclose you specimens of a species of ant, which just now is a great pest on the premises of a friend, a shopkeeper and baker. They made their appearance about seven or eight months ago, having troubled his neighbours previously and then migrated; with him, however, they appear to have taken permanent lodgings. A short time ago he found a piece of wasp-cake had been eaten up; so the next supply was suspended by a string from a hook in the ceiling, in a place where they had not been previously noticed; in half an hour's time, however, it was quite covered, and, considering their small size, there must have been thousands of them. On their first appearance they took possession of the whole place, but have now settled down to the neighbourhood of the bakehouse, swarming over everything, issuing from cracks near the oven in troops of hundreds and thousands, and quickly covering everything in the shape of sweets or animal food left for a few moments. I should be glad to know if they are usually found in this country, and to have any hints as to their clearance.—S. H. GASKELL, 147, Brinnington, Stockport: *February 15th, 1877.*

[Your insects are the House-Ant (*Diplorhynchus domesticus*), now very common all over London, and doubtless also in other large cities and towns. The nests are usually under the flooring, and this adds considerably to the difficulty in getting rid of the pests. The most feasible plan is to note the place whence they emerge on their predatory expeditions, and then to pour in boiling water, tar-water, solutions of carbolic acid, or of other destructive agents, repeating the operation frequently. Perseverance in this may have the desired effect.—EDS.]

*Squirrel versus Hornet.*—When on a collecting ramble, in July last, about the jungly ground at Pultah, near Barrackpore, I was much amused by the conduct of some three or four squirrels (*Sciurus palmarum*) which had taken up their position in the crowns of two date-palm trees; the trunks of these trees, just below the crown, had been cut all round in notches by the natives for the collection of the juice (Talár-Ros) in little earthenware pots (Ghurás); these pots had been taken away, but there was still sufficient juice to attract large swarms of the common Indian hornet (*Vespa cincta*), so that all the cut or bare portions of the trunks were covered by dense buzzing struggling masses of these insects; but the squirrels did not mind the hornets in the least, and every few seconds would descend upon them, brush and clear them away with their front paws, and then enjoy their fill of the sweets, then up again into the crowns of the trees, their places being instantly filled by the black mass of hornets; down would come the squirrels again, and again the hornets had to clear out, and this continued for over half-an-hour, when I grew tired and left. The squirrels behaved in the most business-like and systematic manner,—a pass or two with their front paws and a whisk of their tail and the hornets were cleared out, and hovered in clouds round the trees, waiting till their turn should come again. The hornets never made the slightest attempt at resistance but accepted the treatment by the squirrels as simply inevitable, and this is the more curious on account of *V. cincta* being anything but an easy-tempered fellow, as any one who has ever molested a nest of this species will know well, for they will attack and follow you up with the greatest persistence, and Europeans, natives, horses, and even elephants can be severely punished by their stings. I have noticed *V. cincta* to be especially fond of small species of "skipper" butterflies, about the size of *H. sylvanus*;

they hold these butterflies (after capture) sideways, their legs grasping firmly the roots of the two wings on the side pointing downwards, they then strip off the two wings on the other side that point upwards, and then work with their mandibles from the thorax to the apex of the abdomen squeezing out all the juices, and then when completely sucked dry they drop the body with its two remaining wings and fly away. I have watched *V. cincta* flying with "skipper" in this way, but they appear to prefer to retire to some tree or bush for the better enjoyment of their feast.—G. A. JAMES ROTHNEY, Barrackpore: January 29th, 1877.

*Note on Trioza Walkeri, Först., and Chermes rhamni, Schrank.*—In this country, *Trioza Walkeri* had been found only on blackthorn and spindle-tree, but on the 20th September last, between Dartford and Darenth, I beat four examples from a bush of *Rhamnus catharticus*, and Mr. C. W. Dale writes to me that he finds it abundant on the same plant in Dorsetshire; thus, the statement of Flor, Rhyn. Livl., ii, 496 (1861), that the insect lives on the buckthorn, is confirmed. Flor does not describe the larva, but says that it is somewhat numerous on *Rhamnus catharticus*, and up to the time of its final development, in July and August, rolls the margins of leaves inwardly in the direction of their length. I saw several such leaves when I got my examples.

Herr von Frauenfeld (Verh. k. k. zool.-botan. Ges. Wien, xi, tab. 2) figures the wings of the imago, and the pupa of *Tr. Walkeri*, and a deformed leaf of *Rhamnus frangula*. He (p. 169) gives some interesting details of the habits of *Trioza Walkeri*, which he found on a bush of *R. frangula*,\* of which nearly every leaf was disfigured by being rolled up, and in each roll the *Trioza* larva lived. "The margin of a leaf was rolled from beneath outwards in several places, the parenchyma was thickened and hardened, there being sometimes on one leaf one, two, or three rolls, each at times as much as 3 mm. diameter, by 15 mm. in length. The green larva grows very slowly, and invariably perishes if it be not left on the tree until near the time of its full development, which occurs at the end of August. The proximity of maturity is denoted by the progressive unclosing of the roll, and in the greater space thus obtained, the pupa, 1½ mm. long, throws off its last integument." The author then goes on to say that "the pupa is exactly like (ganz so) that described by Schrank in the 'Fauna Boica' as *Psylla (Chermes) rhamni*, but that the imago agrees with Förster's description of *Trioza Walkeri*, and that the certainty that each author had the same species before him is fairly questionable. Schrank says nothing about the excrescence in which the larva lives, though he scrupulously notices such economy in other species; and Förster says nothing about the remarkable deviation in the form of the wings of *Tr. Walkeri* from all other species of *Psyllida*. The perfect insect, when first developed, is entirely green, the wings are transparent, and a long time is requisite for the full coloration to be effected. If killed in the immature condition and dried immediately, the insect is quite unlike the mature form, and can only be recognised as the species by the shape of the wings."† Nevertheless, Herr von Frauenfeld concludes that Schrank's and Förster's insects are the same species, and he adopts for it Schrank's specific name *rhamni*.

\* Dr. Löw thinks this should be *catharticus*; he finds *Tr. Walkeri* on this species of *Rhamnus* only (op. cit. xxvi, 209).—J. W. D.

† This is probably Mr. Scott's "var. *albipennis*," Trans. Ent. Soc., p. 553 (1876).—J. W. D.



Dr. Franz Löw (Ver. k. k. zool.-botan. Ges. Wien, xxvi, 1876, 211) gives in detail the natural history of *Trioza abieticola*, Först., which he finds on *Rhamnus catharticus*. The hibernated female lays her eggs in April or May, in batches, on the under-side of the tender leaves; above these, on the upper-side, small pustular elevations in a short time appear, beneath which, in about eight or ten days, the young are hatched, and for a time remain there sucking the leaf, but at each successive moult they remove to another part of the under-side, or rarely go the upper-side. The leaves suffer no other than the slight deformity consequent on laying the eggs, the sucking of the young *Trioza* causing no change in their appearance. Then follows a description of the young form which Dr. Löw says is without doubt identical with that described by Schrank as *Chermes rhamni*, and he adopts this name for the species.

Thus, two very distinct species have been referred, by different authors, to the *Chermes rhamni* of Schrank, and both on the ground of the early stage of the life of the insect agreeing with Schrank's description. But, as Dr. Löw says (*op. cit.*, p. 210), von Frauenfeld has overlooked the fact that Schrank states the body of his insect is transparent, and that this is not the case with *Tr. Walkeri*; and this makes it so much the more probable that Dr. Löw is right in claiming that his species, which has this peculiarity, is the *rhamni* of Schrank. Yet absolute certainty is wanting, because there is yet another species of *Psyllida*, unknown to Dr. Löw, which lives on *Rhamnus catharticus*—*Ps. rhamnicola*, Scott (Trans. Ent. Soc., 1876, p. 548, 10),—of which the larva is hitherto not observed, but which, when found, may also agree with Schrank's too brief description.

Förster (Verh. Ver. Rheinl., v, 97, 5) does not allude to Schrank's species further than by saying, under the description of *Psylla alaterni* (of which he received the types from Mr. Haliday, with this MS. name, and thence surmised that they were taken on *Rhamnus alaternus*), that he strongly doubts if it be the *Chermes rhamni* of Schrank. Mr. Scott (Trans. Ent. Soc., 1876, p. 535) places *Ps. alaterni*, Först., as a synonym of *Ps. hippophaës*, Först., yet, without questioning this conclusion, based probably on a comparison of the so-called species, it is only when the larva that lives on *Hippophaë rhamnoides*, and that which lives on *Rhamnus alaternus*, are discovered, and they and their economy are compared, that there will be absolute certainty of their identity or difference, or that the possibility of one or other, as the case may be, being *Ch. rhamni*, Schrank, can be determined.

With all these considerations in view, it appears to me to be rather premature to apply Schrank's specific name "*rhamni*" to any species, and that it is desirable it should remain in abeyance at present; or, better, that it should be dropped altogether.—J. W. DOUGLAS, Lee: January 15th, 1877.

*Melanism, &c., in Insects.*—This interesting subject has been ably treated by Mr. Birchall (p. 130 *ante*) on the Darwinian and climatic theories, and by Dr. Buchanan White as to its possible meteorological cause (p. 145 *ante*), but I am far more inclined to believe in the suggestion of Mr. R. Fetherstonhaugh (p. 215 *ante*), that the change is produced by a vivid impression of the color of the surrounding objects on the female insects during the *period of generation*, and a strong tendency to re-produce in their progeny the same colors among which they themselves have lived; and, as

we know that this phenomenon of nature has been accepted, we may fairly be permitted to consider it as a probable cause of melanism or leucochroism, under suitable conditions.

Now, it curiously helps this idea, when we consider that the very localities where we find melanism in *Lepidoptera* most pronounced, viz., Yorkshire, Lancashire, and Durham, are all manufacturing districts, where immense volumes of smoke are constantly given off from furnaces and coal-pits, covering more or less the whole of the vegetation with a fuliginous deposit, giving to large tracts the name of "the black country." What is more natural than that this prevailing color, continually before the vision of the pregnant insects, should tend very largely to produce melanism, known to be so common in these regions, in their offspring? Smoky London too produces its melanic variety, *perfumaria*, of *Boarmia rhomboidaria*. The New Forest is also prone to produce melanic forms, where the soil is in places extremely dark colored, induced, doubtless, by the abundance of astringent vegetable matters, tannic or other acids, which through the annual decay of large quantities of oak, common brakes and heath, is set free, and washed into a soil charged with iron, and producing an inky blackness of earth. I could enumerate several *Lepidoptera* of this district that are decidedly melanic in tendency (and may mention that the common viper here is often *quite black*, the characteristic black or dark diamond pattern of its back being only faintly indicated, in consequence of the blackness of the whole body). But the best insect to illustrate my view is *Gnophos obscuraria*, a species very common in some parts of the Forest and where the soil is very black, and here is the most positive black type, harmonizing with the soil; this same species a few miles off, on the chalk, becomes a beautiful pale grey or almost white, agreeing admirably with the white and grey of the soil: thus, on the black soil we get *obscuraria* black, and on the chalk, pale grey.

Aberration of color in an insect may be occasional and purely accidental, but when we see, not single specimens but a constant and invariable prevalence of this harmonizing with the surrounding soil, I cannot but think, that the cause may be mainly the *powerful impression of surrounding objects on the female during the all important period of life, viz., that of propagation*, coupled with an instinctive provision for the protection of its future progeny: at any rate, the subject merits a further and deeper investigation.—WILLIAM HENRY TUGWELL, 3, Lewisham Road, Greenwich: *March, 1877.*

*The Sale of the late Mr. Edwin Brown's Collections.*—As this sale (which took place on the 9th, 10th, and 12th of March, at Stevens' rooms) was probably the most important that has ever occurred, a few statistics will be interesting. The entire Collection was comprised in over 900 lots, and realized about £1,670. That it was rich all round is sufficiently obvious, but Mr. Brown paid especial attention to Geodephagous *Coleoptera*. The *Cicindelidæ* were sold for nearly £160, the *Carabidæ* for about £480, the *Cetoniidæ* for about £215. The British Insects (excluding *Lepidoptera*, which were not in the sale) were sold for about £125, a portion of them being secured for the Royal Dublin Society. A very good British Herbarium was sold for the utterly insignificant sum of £6 6s. A few details may be given. The species of the genus *Manticora*, comprised in four lots, were sold for nearly £16. *Amblychila Piccolomini* (1 example) for £5 10s. (H. Deyrolle), *Platychila pa*<sup>17</sup>

(1 example) for £7 10s. (Janson), *Mouhotia gloriosa* (1 example) for £9 19s. 6d. (R. Oberthür), *Anacamptorhina fulgida* (2 examples) for £11 0s. 6d., *A. ignipes* (2 examples) for £10 10s., and a series of species of *Euryomia* (93 examples) for nearly £20 (Janson). We are told that Drury's and Francillon's collections were dispersed from the same place of sale, but have no memoranda as to the amounts obtained. Haworth's collection (catalogued by Westwood) realized in 1834 (10 days' sale) about £400, and Children's shortly afterwards (3 days) about £700 or £800.

## Reviews.

**ZOOLOGICAL CLASSIFICATION:** a handy book of reference, with tables of the sub-kingdoms, classes, orders, &c., of the Animal Kingdom, their characters, and Lists of the Families and Principal Genera. By FRANCIS P. PASCOE, F.L.S., &c. Royal 18-mo., pp. 204: London, John Van Voorst, 1877.

The compiler of this useful little book comes before the zoological public in quite a new light. We do him no injustice when we say that, outside his own circle, he has been known only as an entomologist, and even as such only by descriptions of new genera and species of *Coleoptera*, almost exclusively from his own magnificent collection. We rejoice, therefore, that he now exhibits what was already well known to his friends—his extensive knowledge of general zoology. The lengthy title shows what the work is:—necessarily a compilation, but a compilation combined with originality. The inverse sequence is followed (practically) throughout, commencing with the *Protozoa* and ending with Man. As a beginning, the now-prevalent idea as to "*Bathybius*" is adopted, viz.: that it is not a living protoplasmic substance, but more of the nature of a chemical deposit.

Our special remarks on the work must relate purely to the entomological portion, or in other words, to the *Insecta*, which form part of the "sub-kingdom" *Arthropoda* (the *Articulata* of the older authors). Some idea of the author's views may be gathered from the "Orders" admitted, viz.: *Mallophaga*, *Collembola*, *Thysanura*, *Hemiptera*, *Orthoptera*, *Neuroptera*, *Trichoptera*, *Diptera*, *Lepidoptera*, *Hymenoptera*, and *Coleoptera*; but he wisely remarks (p. 76) that "the limits of this Class and of some of its Orders, are not quite beyond dispute." It is evident, at a glance, that this classification should not be merely termed a compilation; we think there is no hitherto published arrangement that accords with it in all points. The views of Brauer and Lubbock would, if followed, place the *Collembola* at the beginning, but we here find the *Mallophaga* (or bird-lice) preceding them, with the remark that "they are sometimes classed with the *Hemiptera*:" we would suggest, more frequently with the *Orthoptera*. The *Hemiptera*\* end with the *Thysanoptera* (or *Thrips*), and, apparently in despair, with the true lice; whatever doubts there may be as to the position of the former, the latter are generally considered as undoubtedly (if very degraded) *Hemiptera*. The *Orthoptera* are arranged (practically) after Burmeister's plan; we take exception to the words "Larva and pupa (our italics) without wings;" in effect the whole existence of the insect from the time of leaving the egg to its absolutely perfect stage, is only a question of degree. *Neuroptera*, as usual, form a stumbling-block. The term is used in the Linnean sense (excluding the *Trichoptera*, which are given ordinal position), and the result is

\* We notice (p. 78) "*Dermaptera*" given as a synonym of *Hemiptera*, and omitted under *Orthoptera*.

the inevitable *olla podrida*. The author apparently discards the term *Pseudo-Neuroptera*, and suggests Westwood's "Biomorphic insects," which is nearly equivalent to Gerstaecker's "*Amphibiotica*." Here again we take exception; this time to the words "pupa incomplete," as applied to the whole Order as here constituted. The so-called "pupa"-stage of the *Biomorphotica* is precisely in the condition of that of the *Orthoptera*, whereas in the "*Sub-necromorphotica*" the fact that the pupa is active for a few minutes before its final change is scarcely of importance. In *Chrysopa* and *Myrmeleon*, the cast-off *puparium* lies by the side of the cocoon. The arrangement of the *Lepidoptera* has nothing peculiar in it; but we are not clear as to the position assigned to the anomalous *Castniidae*. In the *Hymenoptera* the only remark that occurs to us is the retention of the *Cynipidae* under the group "*Pupivora*," especially in conjunction with the habits of the group, as given in the line immediately above. To the *Coleoptera* is given (we think) rather undue prominence in details, but this is natural, the author being specially a Coleopterist. The *Stylopidae* are included in this Order; but we do not see in it, nor elsewhere, any mention of the *beaver-parasite*, which Le Conte declares to be Coleopterous, which Ritsema placed with the *fleas*, and for which Westwood erected the Order *Achreioptera*.

In the foregoing rapid analysis, some points have been touched upon just as they occurred to us, and we have borne in mind the fact that this book is necessarily synoptical. Nature abhors hard and fast lines, and, as the author says in his preface (p. iv), "exceptions occur to almost every character." Those who desire a handy book of reference will find the work answer their purpose; the details must be filled in afterwards.

THE TRANSACTIONS OF THE ENTOMOLOGICAL SOCIETY OF LONDON FOR THE YEAR 1876 (8vo, pp. 655 and lxxxvii, with 12 plates; at the Society's Rooms, 11, Chandos Street, Cavendish Square, and Longman & Co.).

To those who have not already made acquaintance therewith, we commend this comely volume. It contains twenty Memoirs, contributed by ten Authors, relating to five Orders of Insects; and of the twenty, seven relate to *Coleoptera*, four to *Diptera*, four to *Hymenoptera*, three to *Lepidoptera*, and two to *Hemiptera*.

The most important Memoir, itself extending to nearly 400 pages, is that of Dr. Sharp, on the *Staphylinidae* of the Amazon Valley, mainly founded on the materials amassed by Mr. Bates, but supplemented by species collected by Dr. Trail and others. The number of species enumerated is 487, and of these no less than 463 are described as new; of 77 species brought home by Dr. Trail, 55 had not been found by Mr. Bates. These figures sufficiently attest our ignorance of these minute denizens of Tropical America: and when it is added that the author estimates the total number of Amazonian *Staphylinidae* at from 4000 to 5000 species, it must be admitted that this preliminary contribution to a knowledge of the group has not appeared a whit too soon. The descriptions are elaborated with all Dr. Sharp's accustomed care, and are interspersed with observations on distribution and structure, and with critical remarks. If too special for the general reader, the paper must necessarily be indispensable to every future student of the Amazonian *Brachelytra*.

A word must be said about the nomenclature. Take, for instance, the genus *Belonuchus* (pp. 35, 145, *Beleonychus*?), which, by the way, the author does not

regard as really distinct from *Philonthus*, but uses it only as a matter of convenience, because the species registered under *Philonthus* are already so numerous. The first species of *Belonuchus* is given as *Staphylinus hamorrhoidalis*, the second as *Philonthus xanthopterus*, and the third (a n. sp.) as *Belonuchus Batesi*. Compare *Xanthopygus* (pp. 35, 125) and *Xantholinus* (pp. 36, 198). Viewed merely as a concise mode of stating that *Belonuchus hamorrhoidalis* was first described by Fabricius as a *Staphylinus*, no objection can be made to the mode of citation or reference. But I suppose Dr. Sharp means more than this, and that the mode adopted is a practical carrying into effect of the doctrine propounded in his pamphlet, published in 1873, on "the object and method of zoological nomenclature," in which he suggested that a distinction ought to be made between the "species name" and the "classificational name." The "species name" is the name originally given to it according to the Linnean system, the duplex name consisting of what are commonly called the generic and specific names. What the "classificational name" is, whether it is to consist of two words or three, does not so clearly appear. But whatever it may be, each natural object is to have two distinct scientific names: a denominator, by which it is always to be spoken of; and something else, by which it is to be known to the initiated, but which is never to be mentioned as its name. To say nothing about the misconception of the Linnean system which is involved in Dr. Sharp's notion of the "species name," I believe zoologists have not yet become enamoured of this proposed simplification of nomenclature, or of the idea of having two separate names for each species, even if the classificational name do not consist of more than two words. But would it not be the inevitable consequence of the introduction of such a scheme that we should, in a short time, have a trinomial instead of a binomial system of nomenclature? In the instance in question, *Staphylinus hamorrhoidalis* is the "species name;" but classifiers have removed the insect out of *Staphylinus* and placed in *Belonuchus*; the species name, if it stood alone, would mislead, for standing alone it would be an assertion that this insect is a *Staphylinus*, and to shew that it is not a *Staphylinus*, it becomes necessary either to substitute or to add the name *Belonuchus*. If the "species name" is retained, and it has to be shewn that the insect, though called *Staphylinus*, is not a *Staphylinus*, there seems to be no alternative but to speak of the insect as *Belonuchus (Staphylinus) hamorrhoidalis*; and similarly *Belonuchus (Philonthus) xanthopterus*—or, if preferred, the order may be reversed and the insect called *Staphylinus (Belonuchus) hamorrhoidalis*. I believe Dr. Sharp repudiates the idea of substituting a trinomial for a binomial system: but his mode of dealing with the previously-described species, in the paper now under review, goes far to show that such must be the result of his plan. At any rate, he can only avoid that result by calling one thing by the name of another: and in truth it seems to be the essence of his plan, that when we call a thing a spade, we do not mean that it is a spade. And the answer to the proposal is, that it is really impossible, and if possible would be undesirable, to keep scientific nomenclature and classification distinct. Now that it is agreed on all hands that the creature which Scopoli mistook for a butterfly and named *Papilio macaronius* is an *Ascalaphus*, to continue to call it *Papilio macaronius* is not only perpetuating a blunder, but telling a continuous falsehood. We may negative the false assertion by calling the creature *Ascalaphus Papilio macaronius*, but this is a trinomial system: the alternative is, drop the erroneous *Papilio* altogether, and take *Ascalaphus macaronius* as the

name of the insect. And this, the prevailing plan, is I submit the proper one. In popular language, a turnip-fly may continue to be so called, though it is known not to be a fly at all. But when, in scientific language, I call an insect *Papilio*, I mean that it is a *Papilio*; if it is not a *Papilio*, I do wrong to call it one, and therein am neither scientific nor truthful.

Other Coleopterous memoirs are supplied by Messrs. Baly, Bates, Waterhouse, and Westwood. Mr. Bates has a coloured plate of Japanese *Geodephaga*, and Prof. Westwood a plate of *Malacodermata* from New Guinea.

The papers on *Diptera* are all from the pen of the President, and are illustrated by a plate of exotic *Tipulidæ*, two plates of *Acroceridæ*, and one of species of *Systropus*. *Systropus crudelis*, n. sp., from Natal, was bred from a cocoon resembling one of the Lepidopterous *Limacodes* or *Doratifera*; corroborating the observation of Mr. Walsh, who bred the North American *Systropus macer* from a cocoon of *Limacodes hyalinus* (Proc. Boston Soc. Nat. Hist., ix, 800). A doubtful species of this genus, not mentioned in the monograph, has been described by Dr. Philippi, in the paper mentioned below, under the name of *Systropus* (?) *chilensis*.

It is so long since the Society has had the opportunity of publishing anything on the *Diptera*, that it seems almost a pity to point out that, as Mr. Verrall informs me, the supposed new Chilean *Acroceridæ* were most, if not all, of them described by Dr. Philippi in 1865. Prof. Westwood appears to have overlooked the "Aufzählung der chilenischen Dipteren" published in the Verh. zool.-botan. Ges. Wien, xv, 595—782, pl. xxiii-xxix. The curious hunch-backed form *Megalybus* (Trans. p. 511, pl. v) is figured by Philippi, and all the four species, *M. pictus*, *tristis*, *gracilis*, and *subcylindricus*, are described by him under the same names (Verh., pp. 641—644), with two other species, *M. crassus* and *obesus*. The specimens in the Hopeian collection had MS. names attached, and as these have happily been retained, Dipterists are spared a number of synonyms. I may add that Schiner (Reise der Novara, Zool. Dipt., pp. 140—144, in 1868) referred *Megalybus*, Philippi, to *Thyllis*, Erichson, re-described *M. gracilis*, and re-named *M. crassus* as *Thyllis Philippii*, on the ground that there was already a *Thyllis crassa*. From the list of species of *Lasia* hitherto described (p. 508), Prof. Westwood has omitted *L. cyaniventris*, described in 1867 by Jännike (Abh. senck. Gesells., vi, 351), and *L. superba*, described in 1868 by Schiner (Novara, Dipt., p. 143), both from Chili; and of the four species added on p. 509, two at least, *L. ænea* and *L. nigripes*, are described in the above-mentioned paper by Philippi (pp. 647, 648) under the names *Panops æneus* and *Panops nigripes*. Three other Chilean species, *P. carbonarius*, *rufus*, and *pullus*, are also described by the Professor of Santiago; but from these it would seem that Prof. Westwood's *Lasia æneiventris* and *bicolor* are distinct. Query, however, whether *L. æneiventris* is not the *cyani-ventris* of Jännike? Of the genera of *Acroceridæ* mentioned by Prof. Westwood on p. 517, it may be observed that *Exetasis*, Walker, is, according to Loew (Wien. ent. Monats., i, 34), and Schiner (*ubi sup.*), identical with *Ocnæa*; that *Eulonchus* was established by Gerstäcker, not by Loew, *E. tristis* having been first published in 1872; that *Opsebius* was established by Costa, not by Loew, *O. inflatus* having been only re-described in Besch. europ. Dipt., and *Pithogaster*, Loew (Wien. ent. Monats., i, 33) is a synonym of *Opsebius*; that *Mesophysa* was established by Macquart (1838), not by Thomson, *M. Australasia* having been first published in 1868, and Schiner sinks *Mesophysa* in *Panops*. To Prof. Westwood's list, besides

Macquart's five genera, *Eriosoma* (which Schiner refers to *Ocnæa*), *Mesocera* (which the same writer refers to *Psilodera*), *Physegaster*, *Epicerina* and *Pteropexus*, the following may be added :—

SPHÆROGASTER, Zett., Dipt. Scand., i, 232.

APELLEIA, Bellardi, Dipt. Messic., Appx. p. 17 (1862). *A. vittata*, Mexico.

HOLOPS, Philippi, Verh. z.-b. Ges. Wien, 1865, p. 645. *H. cyaneus* (sic) and *H. inanis*, Valdivia.

SPHÆROPS, Philippi, Verh. z.-b. Ges. Wien, 1865, p. 646. *S. appendiculata* (sic) Santiago.

Further references to recently described species may be supplied as follows :—

*Holops Frauenfeldi*, Schiner, Novara Dipt., p. 143 (1868). Chili.

*Philopota semicincta*, Schiner, „ p. 144. South America.

*Acrocera obsoleta*, Van der Wulp, Tijds. v. Ent., 1869, p. 139. Wisconsin.

*Opsebius sulphuripes*, Loew, Berl. ent. Zeits., 1869, p. 166. New York.

*Oncodes costatus*, Loew, Berl. ent. Zeits., 1869, p. 165. Massachusetts.

„ *formosus*, Loew, Eur. Dipt., iii, 101 (1873). Scharud.

And lastly, it may be added that Schiner (*ubi sup.*) mentions 103 species of *Acroceridæ* as having been described up to 1868, and divides the family into three sub-families, containing the following genera :—

ACROCERINÆ. *Oncodes*, *Acrocera*, *Holops*, *Sphærops*, *Opsebius*, *Cyrtus*, *Psilodera*, *Sphærogaster*.

PANOPINÆ. *Pterodontia*, *Pialea*, *Astomella*, *Apelleia*, *Physegaster*, *Ocnæa*, *Epicerina*, *Pteropexus*, *Panops*, *Lasia*, *Eulonchus*.

PHILOPOTINÆ. *Terphis*, *Philopota*, *Thyllis*.

I presume Prof. Westwood's new genera, *Apsona*, *Leucopsina*, *Pialeoidea*, and *Nothra*, will all fall within the *Panopinæ*. And *à propos* of the genus *Astomella*, it may be mentioned that Brauer (Verh. z.-b. Ges. Wien, 1867, p. 737) describes and figures the larva and pupa of *A. Lindenii*, Erichs. (Entomog., p. 159); the larva being parasitic in the body of a spider, *Cteniza ariana*.

In *Hymenoptera*, Mr. Cameron is to be welcomed as a new contributor to the Transactions with a paper on *Tenthredinidæ* and *Siricidæ*, chiefly from the East Indies; whilst our old friend, Mr. Frederick Smith, describes and gives a coloured plate of *Formicidæ* and other *Hymenoptera* from New Zealand, and by way of Supplement to three previous papers on the *Cryptoceridæ*, he now adds a fourth, and describes and in an excellent plate figures all the sexes of *Meranoplus intrudens*, a South-African species, which constructs its formicarium in the thorns of a species of *Acacia*.

Of the papers on *Lepidoptera*, two by Mr. Miskin are descriptive of Australian novelties; whilst in the third Prof. Westwood gives, from the observations of Mr. Bowering, the habits of a remarkable moth from Hong Kong, apparently belonging to the family *Arctiidæ*, the larva of which is parasitic on the lantern-fly, *Fulgora candelaria*, and which in allusion to this circumstance is described under the name of *Epipyrops*. A capital plate of details of the various stages of the insect accompanies the letterpress.

The Hemipterous memoirs are especially valuable, as the only papers in the volume which are devoted to British Entomology. One is a Monograph, with two plates, of the Homopterous family *Psyllidæ*, by Mr. John Scott, in which 42 (or 43?) species of these curious little insects are enumerated. The other is the third part of Mr. Edward Saunders's most useful Synopsis of British *Heteroptera* (with a plate of *Saldæ*), the earlier portions of which appeared in the Transactions for 1875.

In addition to the more elaborate memoirs, the "Proceedings" contain many interesting and valuable notes by various members, an account of the principal objects exhibited at the meetings of the Society, a summary of the discussions there-  
 anent, and finally the Annual Address of the President, which contains a *resumé* of the Entomological doings for the year, both at home and abroad.

Even this does not exhaust the publications of the Entomological Society for 1876. Another part (the fifth) of the General Catalogue of the Insects of the British Isles was issued; and this part comprises the *Hemiptera-Heteroptera*, and the main portion of the *Homoptera*, giving the synonymy of upwards of 700 species, compiled by Messrs. Douglas and Scott.

The Secretaryship of the Society is no sinecure; and to say nothing of other duties, the editing of the publications and seeing them through the press is in itself a work for which many thanks are due to Mr. Grut.

A few errors have escaped author and editor alike. For instance, *Pacilus* (Trans., p. 4) is a misprint for *Pæcilus*; *Pimpilides* (p. 479) for *Pimplides*; *Lathrobium minor* (p. 239) should be *L. minus*; *Sunius bispinus* (p. 301) is probably a mistake for *bispinis*; *Derecyrtia deceptus* (p. 474), *Rhopalum carbonaria* (p. 484), and *Lasia rufovestitus* (p. 509), can hardly be defended; *Prosopis* has hitherto been treated as feminine, so that *P. relegatus* and *capitosus* (p. 485) will scarcely accord with their congeners; *Acanthida* (p. 621) and *Reduvida* (p. 623) should of course be *Acanthiida* and *Reduviida*; and the Latino-Greek hybrid, *Cryptocerus pallidicephalus* (p. 606) must have crept in by inadvertence.

The President, not content with describing new species, insists upon discovering new islands. Thus, of *Systropus sphegoides*, he says (p. 576): "Habitat in insulâ Makassar. Etiam in insulâ Celebes." Unless my memory is at fault, there is no Island of Makassar, but the town of Makassar is in the Island of Celebes. Again, of *Astychina flavicollis*, he says (p. 495): "Habitat in insulâ Malayanâ Dorei dictâ." I am under the impression that there is no Island of Dorey, and that the town of Dorey is in New Guinea; and on this point I cite the authority of Prof. Westwood himself, who in Trans. Ent. Soc., 1870, p. 128, describes a *Curculionellus doreianus*, and says of it: "Hab.—In Nova Guinea (Dorey)."

Mis-spellings like *Omalium* (p. 402), *Thorazophorus* (p. 418), *Ogcodes* (p. 516), and *Ploiaria* (p. 623), have doubtless been intentionally retained, because the names were so mis-spelt by the original nomenclators. But the compilers of the Catalogue of *Hemiptera* have emancipated themselves from that reverence for blunders which still enthral some of the writers in the Transactions. In accordance with the suggestions of the Rev. T. A. Marshall (Ent. Mo. Mag., iv, 280), eyesores like *Eysarcoris*, cripples like *Ceraleptus* and *Myrmedobia*, and misbegotten deformities like *Systellonotus* and *Temnostethus*, are replaced by *Eusarcocoris* (p. 3), *Ceratoleptus* (p. 8), *Myrmedonobia* (p. 49), *Systolonotus* (p. 36), and *Tmetostethus* (p. 50). And following in the same course the compilers have amended *Arytaina* into *Arytana* (p. 91), *Kybos* into *Cybus* (p. 79), *Dikraneura* into *Dicranoneura* (p. 80), and *Stroggylocephalus* into *Strongylocephalus* (p. 74). But even in the Catalogue we find *Reduvina* (p. 55), and *Tettigonida* (p. 78), instead of *Reduviina* and *Tettigoniida*; *Leptopterna ferrugatus* and *dolobratius* (p. 27); *Delphax* (p. 66), which is masculine, is made feminine; rightly as some, but wrongly as others, say, *Pediopsis* (p. 77) and *Eupteryx* (p. 82) are made masculine; and *Phytocoris nigrita*



is converted (p. 44) into *Systratiotus nigrilus*! Not only Douglas and Scott, but Herrich-Schäffer, Kirschbaum, Fieber, and Reuter, appear to entertain the idea that *nigrila* is the feminine of an adjective *nigrilus*: but the Nigrilæ were people living near the Niger, "*nigrila*" is a noun substantive, "*a nigger*," just as "*nauta*" is a sailor. Fallén's *Phytocoris nigrila* was quite correct, and on removing *nigrila* into *Capsus* or *Polymerus* or *Paciloscytus* or *Systratiotus*, there is no more ground for changing it to *nigrilus* than there would be for changing *nauta* into *nautus*, or *incola* into *incolus*.

As a curiosity in nomenclature, reference may be made to *Lopus mat*, the *Cimes mat* of Rossi (Cat. p. 48), which eclipses the *Bagous frit* of Herbst. "*Frit*" vocatur illud summa in spica jam matura, quod est minus quam granum; so at least says M. Terentius Varro, De Re Rustica, i, 48, 3. I was a long time in finding an explanation of Herbst's *frit*; can any one aid me to a meaning for Rossi's *mat*?

But to return to the Transactions. It is a matter for regret that several of the habitual contributors are this year conspicuous by their absence; nevertheless, the volume fully maintains the credit and reputation of the Society. It is, however, like some of its predecessors, open to the objections, first, that only a tithe of the whole has reference to the Entomology of our own country, a field which is yet far from being exhausted; and secondly, that descriptions of insects occupy nearly all the space. Thus the volume is more useful for reference than agreeable for reading; it is one for the study of the specialist, and contains too little that is attractive to the general reader. It must be borne in mind that probably the majority of those to whom the Society looks for support, are not, and never will be, entomologists *pur sang*; many of us are mere *dilettanti*, who take a warm and (let us hope) an intelligent interest in the science and all that concerns it, who recognise the necessity for, and the importance of, the descriptive branch, but who, nevertheless, would like to see a larger number of papers on habits and economy, of essays on classification or geographical distribution, or other subjects of less restricted interest. I think this result might be attained without pandering to popularity, and without relaxing too much from the severe standard which a scientific Society is bound to maintain. These remarks are addressed to intending contributors; for the Memoirs must be written before they can be published; and it is an indisputable fact that no single paper on British Insects has been excluded by one on Exotic, and that the excess (if it be one) of descriptive papers is due only to the dearth of papers on economic or philosophic entomology which are offered to the Society. The members therefore have the remedy in their own hands, and it will be their own fault if the Transactions for 1877 do not excel those for 1876 in the interest of their contents—surpass them in scientific value, I do not think they will.—J. W. DUNNING, Lincoln's Inn: March, 1877.

---

ENTOMOLOGICAL SOCIETY OF LONDON: 7th March, 1877.—J. W. DUNNING, Esq., M.A., F.L.S., Vice-President, in the Chair.

Mr. J. M. Wills, Montpelier Road, Peckham, sent for exhibition an example of a Crustacean—apparently of the genus *Cirolana*—with a note stating that it was parasitic at the root of a pectoral fin of a flying fish, taken on board the "*City of Canterbury*," but the locality of the vessel at the time of the capture was not given.

Mr. Douglas exhibited a *Monochamus sartor*, which flew into a garden in the Camden Road, N. London, on a hot day last July, and was brought to him alive.

The species is a reputed native, but in this instance was probably imported as a larva in timber. He also exhibited a melanic example of *Orthosia suspecta*, taken by him at Dunkeld last August (*vide* p. 109 *ante*).

Mr. Champion exhibited *Cardiophorus rufipes*, Fourc. (*vide* p. 227 *ante*), a species new to Britain, taken by Mr. Dunsmore near Paisley; also a British example of *Aphodius scrofa*, Fab., from the collection of Mr. Dunsmore, of which the exact locality had not been recorded.

Mr. W. L. Distant communicated a paper on the geographical distribution of *Danais Archippus*. The author remarked on the migration of the butterfly from North America (its original home) eastwards to Europe and the Azores, and westward to the South Sea islands and Australia; and attributed the "means of dispersal" to "winds, currents, and the agency of man." After the reading of the paper a discussion ensued, in which considerable doubt was expressed as to the probability of insects being conveyed on floating timber by agency of the gulf-stream or other currents.

Mr. Douglas read an extract from a letter just received from Dr. John Sahlberg, of Helsingfors: in which he stated, that for six months of last year he was absent on an entomological expedition to the Yenisei, returning through Siberia, and brought back from the extreme North a great quantity of insects, chiefly *Coleoptera* and *Hemiptera*, in the determination of which he was now engaged. The insect-fauna of Arctic Siberia agrees very closely with that of Lapland, and he had the pleasure to find, sometimes commonly, several species that he had previously discovered in the extreme north of his own country; for example, among the *Hemiptera*, *Platypsallus acanthioides* and *Bathysmatophorus Reuteri*, the latter being the commonest of the *Cicadaria* in the region. Near the river Yenisei, in places that are annually flooded, he obtained many species, which, although generally not new to science, have not yet been found in Europe.

He had just completed the examination of the *Hemiptera-Heteroptera* collected in Siberia, and as they were mostly obtained in the extreme north the number in this group is very scanty, consisting of little more than a hundred species, of which fourteen are new: namely, 1 *Aradus*, 1 *Calocoris*, 2 *Orthotylus*, 1 *Acomporis*, 5 *Salda*, 1 *Corixa*. The species of *Salda* are large and fine, and were all discovered in the high-north (69°—70°, 20'), "extra limites arborum."

He stated also that he had received a commission to work out the *Coleoptera* and *Hemiptera* collected by the four naturalists attached to Nordenskiöld's Yenisei-Expedition (of whom Filip Trybom was the entomologist); the collection, however, is still in Siberia, and until he had examined it, he would delay any publication, although he had descriptions of the new species ready.

## DESCRIPTIONS OF SOME NEW SPECIES, AND INDICATIONS OF NEW GENERA OF COLEOPTERA FROM NEW ZEALAND.

BY D. SHARP, M.B.

The *Coleoptera* described in this memoir are most of them due to C. M. Wakefield, Esq., who has recently given me a number of very interesting forms, found by him in New Zealand. The following is a list of the species to be described:—TROGOSITIDÆ: *Leperina farinosa*, *Promanus* (n. gen.) *depressus*, *Grynoma* (n. gen.) *fusca*, *G. diluta*. COLYDIIDÆ: *Ulonotus discedens*, *U. integer*. RHIZOPHAGINI: *Lenax* (n. gen.) *mirandus*. CUCUJIDÆ: *Brontes pleuralis*. DERMESTIDÆ:

*Trogoderma serriger*, *T. signatum*. CLERIDÆ: *Paupris* (n. gen.) *aptera*, *Parmius* (n. gen.) *debilis*, *P. longipes*, *Balcus* (n. gen.) *niger*, *Phymatophœa hilaris*, *P. longula*. MALACODERMES: *Dasytes Wakefieldi*. PEDILIDÆ: *Macratia verticalis*. ANTHICIDÆ: *Cotes* (n. gen.) *vestita*. SCOLYTIDÆ: *Pachycotes* (n. gen.) *ventralis*.

*LEPERINA FARINOSA*, n. sp.

*Fusca, depressa, opaca, elytris et prothoracis lateribus squamulis pallidis vestitis; prothorace dense fere regulariter punctato, lateribus sinuatis, angulis posterioribus rectis; elytris costatis, costis crebre interruptis; antennis pedibusque ferrugineis, illis articulo ultimo fere ovali.*

Long. 9 mm.

Antennæ with the 9th and 10th joints not greatly broader than long, 11th joint rather longer than broad. Head densely and coarsely punctured. Thorax a good deal contracted behind the middle, its hind angles sharply defined and just rectangular; thorax coarsely and closely punctured, but along the middle the punctures are more sparing, though they leave no distinctly defined smooth spaces; towards the margins it is clothed with coarse pale scales. Elytra with fine costæ, which are broken up by numerous narrow but quite distinct interruptions; they are clothed with coarse pale scales, and bear some indistinct patches of coarse, dark fuscous setæ or scales.

Christchurch, a single individual found by Mr. Wakefield.

This species is allied to *Leperina Brounii*, Pascoe, but is very distinct by the much less short terminal joints of the antennæ.

*PROMANUS DEPRESSUS*, n. sp.

*Oblongo-ovalis, elongatus, subparallelus, nigro-piceus, marginibus dilutioribus, subnudus, haud nitidus, antennis pedibusque ferrugineis; prothorace fortiter transverso, lateribus subrotundatis, angulis posterioribus obtusis; elytris seriebus numerosis punctorum impressis.*

Long. 7 mm.; lat. 3 mm.

Antennæ reddish, with the basal joint very large, the 9th joint abruptly larger than the preceding, rather strongly transverse, but a good deal narrower at the base than at the apex; 10th about as broad as but a little shorter than 9th; 11th about as long as broad, nearly as broad as 10th, its apex slightly truncate. Head coarsely and densely punctured, and bearing a fine very scanty pubescence. Thorax about as broad as the elytra, very transverse, the anterior angles not at all produced, the sides distinctly but not broadly explanate, the sides a little rounded, the width at the hind angles the same as at the front, the base broadly but slightly emarginate in front of the scutellum, the surface with shallow punctures and a few fine hairs; the punctures are coarse at the sides, but become quite fine towards the middle. Scutellum rather densely clothed with pale pubescence. Elytra elongate, each with about eighteen series of punctures, and with a very few fine and indistinct hairs. Under surface rather finely punctured, legs red.

Riccarton, found by Mr. Wakefield; also from Dunedin a considerably larger specimen, which presents some slight differences, so that it may possibly belong to a distinct species.

I have thought it advisable to create a new generic name for this species. Its principal structural characters are: antennæ 11-jointed, with a very large basal joint, and a triarticulate club; maxillary palpi largely developed, terminal joint elongate subsecuriform. Head small, with eyes very prominent; and with the clypeus separated from the front by a deep suture. Prosternal process very narrow, middle coxæ nearly contiguous; epipleuræ of elytra very narrow, except at the base. Its systematic position at present should be in the *Trogositidæ*, near *Ostoma*, in Herr Reitter's arrangement.

**GRYNOMA FUSCA, n. sp.**

*Depressa, subopaca, fuscula, antennis pedibusque fusco-testaceis, pube albido micante sparsim vestita, elytris obsolete ferrugineo-variegatis, setis tenuibus erectis adpersis; prothorace minus distincte punctato, valde transverso; elytris punctis magnis et profundis, interstitiis angustis.*

*Long. 4 mm.; lat. 2 mm.*

Antennæ small and slender, the two basal joints paler than the others. Head much narrower than the thorax, closely and indistinctly punctured. Thorax very strongly transverse, a little narrower than the elytra, very slightly emarginate in front, so that the front angles are very indistinct and scarcely at all prominent; hind angles also very indistinct, its punctuation coarse but very obsolete, and nearly wanting along the middle; it is of a smoky colour, becoming yellowish at the margins, and bears fine not very distinct hairs. Elytra densely covered with coarse punctures, and bearing a fine white pubescence, which at the margins is rather long; and also with some upright fine hairs; they are of a smoky colour, but are very indistinctly variegated with reddish or yellowish spots. Legs smoky-yellow.

Christchurch, found by Mr. Wakefield.

**GRYNOMA DILUTA, n. sp.**

*Depressa, subfusca, supra magis testacea; elytris pube argentea irregulariter vestita, setisque erectis tenuibus minus conspicuis, fortiter punctatis, interstitiis latis; prothorace obsolete punctato.*

*Long. 4½ mm.; lat. 2½ mm.*

This species is very closely allied to *G. fusca*, but is paler in colour, and has the punctures of the elytra much less dense, their silvery pubescence is more conspicuous, and the margins are a little more conspicuous.

Tairua; I have received one individual from Captain Broun; a second, destroyed on the journey, was numbered by him 158.

I have also proposed a new generic name for these two species. The chief characters are: antennæ small and slender, 10-jointed, with

a long and slender triarticulate club; maxillary palpi with the terminal joint very large, securiform. Head much smaller than the thorax, eyes moderately prominent; thorax strongly transverse, with its sides a little explanate; prosternal process so narrow that the coxæ are almost contiguous. Tibiæ entirely unarmed; tarsi with the terminal joint large in proportion to the others, the claws thickened at the base, but not dentate. The position of the species in Reitter's arrangement would be I judge between *Pelonyxa* and *Neaspis*.

*ULONOTUS DISCEDENS, n. sp.*

*Fusco-niger, antennis tarsisque rufescentibus, illarum clava fusca; prothorace elytris angustiore, angulis anterioribus acutis, lateribus sinuatis, pone medium contractis, superficie leviter inæquali, opaca, leviter granulata, setis (vel squamulis) minutis parcius vestita; elytris sat nitidis, crenato-striatis, maculis vagis setarum cineracearum vestitis; pedibus gracilibus, fere nudis.*

*Long. 5—6 mm.*

About the size of *Bolitophagus antarcticus*. White, and rather closely allied to that species in structure, but departing greatly from it in its appearance, owing to the sub-nude surface which is destitute of tubercular elevations. The antennæ are rather slender, and terminate in a rather elongate three-jointed club. The thorax has the front margin a good deal emarginate on each side, behind the eyes, and the front angles slender and acute; it increases in width from the front angle to behind the middle, the sides being slightly bisinuate in front of the broadest part, from there it is much narrower to the base, the hind angles being extremely indistinct and ill defined. The elytra show ten rows of punctures, the external indistinct, each puncture is connected with the following one by a fine short raised line; they are clothed with a scanty and very short ashy pubescence, arranged so as to give a spotted appearance. The under surface is nearly bare of pubescence.

Found on the West Coast by Mr. Wakefield.

*ULONOTUS INTEGER, n. sp.*

*Oblongus, piceus, suprâ fusco griseoque variegatus; prothorace inæquali sed haud noduloso, elytrorum latitudine, lateribus rotundatis, in medio tantum obsoletissime excisis; elytris densius vestitis, haud vel vix nodulosus; antennis tibiisque rufis, illis clava nigricante, his squamulis griseis et fuscis vestitis.*

*Long. corp. viz 4 mm.*

This species is intermediate between *Tarphiomimetes viridipicta* and *T. Lawsoni*, Woll.; it differs from the former by its less nodulose elytra, and the almost interrupted curve of the side of the thorax, and from the latter by its thorax being less narrowed in front, its more uneven upper surface, the broader club of its antennæ, and its clothed and variegated tibiæ.

The only individual I have seen was given me by Mr. Wakefield, and was found I believe at Christchurch.

**LENAX MIRANDUS, n. sp.**

*Elongatus, angustus, vix nitidus, sine pubescentia, nigricans, antennis pedibusque rufis; prothorace elongato, angulis anterioribus prominulis, dorso biserialiter fortiter punctato; elytris longitudinaliter sulcatis, sulcis fortiter punctatis; abdominis segmento ultimo grosse punctato.*

*Long. 4½ mm.; lat. 1 mm.*

Head short and broad, as broad as the thorax, above with a very deep, large, irregular depression on each side, separating the eye and the portion of the head behind it from the middle; the broad middle part of the head is rather elevated towards the vertex, and emarginate in the middle behind; it is only very finely and sparingly punctured. The thorax is very elongate, and is at the base as broad as the elytra; it is very slightly narrowed towards the front, but the narrowing does not continue quite to the front, and the front angles are rather sharply marked and distinct: the upper surface is dull, and along the middle are two series of coarse punctures, placed each in an ill-defined impression and diverging a little towards the front; the lateral margins are neatly defined, and just within each is a series of punctures. The elytra are elongate and narrow, and bear each four grooves in which are placed coarse punctures, their hinder part is sinuate externally to facilitate the movement of the hind femora, and outside the four grooves there is a line of punctures on the broader basal portion; on the under-surface there are coarse punctures at the sides of the thorax and breast, and the ventral segments show some coarse punctures or impressions, forming an obscure series at the base of each segment, the apical segment is entirely covered with very coarse and deep, closely placed punctures. The legs are stout, the femora being incrassate.

Found in Peel Forest, Canterbury, March, 1874, by Mr. Wakefield.

Though this extremely remarkable insect should evidently be classed near *Rhizophagus*, it is so distinct therefrom that I have given it a different generic name; the following outline of its structural characters will enable it to be identified:—

Antennæ very short, 10-jointed, the 1st joint short and thick, the 2nd stout and bead-like, 3—9 small, the 9th being very short and transverse, 10th joint forming a large abrupt club, the apical portion of which is pubescent, but not to be distinguished as a distinct joint. The parts of the mouth are but little visible, the mandibles being scarcely, if at all, visible from the upper surface. The head is abruptly constricted behind, so as to possess a broad neck; on the under-surface behind the eyes is a very deep large cavity, in which the club of the antenna can be received. Prothorax with the coxal cavities closed, and broadly separated from the mesothorax, and also rather widely separated from one another by a depressed space. Metasternum elongate. Hind-body with five ventral segments separated from one another by deep sutures, the basal one a good deal longer than the next; it is curved downwards towards the extremity, the pygidium is exposed, and shows a deep longitudinal groove on the middle. The tibiæ are broad below the middle, but with the apex very oblique; they are armed near the apex with teeth or small projections.

The front and middle tarsi are 5-jointed, all the four basal joints are small, the hind tarsi are apparently only 4-jointed, but there may be a very short and concealed 5th basal joint.

**BRONTES PLEURALIS, n. sp.**

*Castaneus, depressus, nitidus; prothorace fere impunctato, nitido, lateribus irregulariter profundeque serratis, vel fissis; elytris minus elongatis, humeris rotundatis, lateribus valde elevato-explanatis, epipleuris latis; metasterno brevi.* Long. corp. 8 mm.; lat. fere 3 mm.

Antennæ elongate and slender, basal joint about as long as joints 2—5 together, 2nd joint about half as long as 3rd, from 4—11 each distinctly shorter than its predecessor, the 11th very nearly as long as the 3rd; their whole length from 7 to 8 mm. Head shining and almost impunctate, the antennal elevations large and strongly marked. Thorax nearly as long as broad, its surface shining and impunctate, but bearing several large shallow depressions, the sides divided by deep, irregular indentations. Elytra with the shoulders quite rounded, bearing six rows of coarse punctures, and with the sides elevated, the elevated part limited from the sutural portion by some large impressions, and its sculpture consisting of a few fine granules. Tarsi elongate, their basal joint much more elongate than in *B. planatus*.

Tairua; two individuals sent by Captain Broun, with the number 322 attached, and the information that they were found under bark.

OBS.—This interesting insect might be made the type of a new genus, for the broad epipleuræ seem to distinguish it abruptly from the other species described; but I think it better to call it at present a *Brontes*. The two individuals sent me by Captain Broun were (as other species of *Brontes* often are) entirely covered with a thick coat of matter, probably the result of the drying of the decaying sappy matter seen under bark, and thus their sculpture was entirely concealed.

**TROGODERMA SERRIGERUM, n. sp.**

*Fusco-rufum, densius irregulariter griseo fuscoque vestitum; antennis apicem versus latissimis, basi testaceâ, apice fusco, articulis 5—11 intus productis.* Long. 5 mm.

Antennæ very short, the 3rd joint slender and rather long, the 4th much shorter and a little angulated internally, the 5th slightly produced, and, like the following joints, very short; these apical joints are dark in colour, and each is strongly produced inwardly, the 11th joint being also very short and broad, but not quite so wide as the 10th. The upper surface is not of a uniform colour, but of different shades of infusate red, and it is densely clothed with depressed grey and fuscous hairs which obscure the sculpture, and which are not arranged so as to form any definite pattern. The legs are reddish.

The only specimen I have seen of this very distinct species was given me by Mr. Wakefield, who found it at Riccarton, Sept. 22nd, 1873.

*TROGODERMA SIGNATUM, n. sp.*

*Nigrum, sat nitidum, pubescentia sparsa sat erecta, et in elytris fasciis tribus transversis albidis dispositis vestitum; antennis brevibus, basi testaceâ, apice fusco, clava 5-articulata; tibiis fusco-rufis.*

*Long. 3 mm.*

Antennæ very short, the five apical joints strongly transverse, the point of articulation placed in the middle of each. Head small, closely punctured, and with a greyish pubescence. Thorax a little narrowed towards the front, the base in the middle much produced over the scutellum, its punctuation indistinct, its pubescence consisting of white hairs, which are not evenly distributed, while the parts between the patches bear more sparing, indistinct, darker hairs. Elytra clothed with white hairs at the base, and with two distinct transverse fasciæ of sparing white hairs, as well as some others at the apex, and the spaces between with some still more scanty and shorter hairs; the punctuation is distant and indistinct, so that the surface is a little shining, notwithstanding the clothing. The under-surface is sparingly clothed with fine hairs. The tibiæ and tarsi are very slender and obscurely reddish. The palpi are pale yellow.

This species was discovered some time since near Auckland by Mr. Lawson, and I have recently received some specimens of it from Captain Broun, with the number 342 attached.

*PAUPRIS APTERA, n. sp.*

*Angustula, testacea, maculis parvis fuscis, parcius pubescens; elytris obsolete punctatis, apicibus singulatim rotundatis.*

*Long. 6 mm.; lat. 1½ mm.*

Antennæ short and stout, pale yellow, 2nd joint shorter than 3rd, 3—8 not differing much from one another, 9—11 about twice as broad as the preceding joints, 9 and 10 each broader than long, the 10th rather strongly transverse, 11th about as long as broad. Head, with the eyes rather broader than the thorax, yellow but infuscate, and with a brassy tinge, its sculpture obsolete. Thorax elongate and narrow, sub-cylindric, but a little dilated in the middle; it is yellow, but has some elongate, dark marks, which are variable in extent; it is almost without sculpture. Elytra small, being but narrow, and, when the hind-body is in the natural condition, not covering it; their shoulders absent, their colour yellow, with small dark marks. Legs long and rather stout, yellow, the femora near their apex and the tibiæ near their base with a more or less distinct dark mark. Beneath pale yellow.

Sent from Auckland by Messrs. Broun and Lawson.

It is well to make a new generic name for this curious Clerid; its chief structural characters are, wings quite wanting, elytra less developed than usual. Labial palpi with terminal joint very large, while that of the maxillary palpi is small and not at all dilated. Eyes coarsely granulated, very nearly entire, with only a very small emargination in front; antennæ inserted not quite close to the eyes, with



short apical joints. Hind coxæ rather widely separated; second joint of tarsus inserted very near the apex of tibia. The insect seems to be very distinct from any allied form, and may be placed near *Opilus*.

**PARMIUS LONGIPES, n. sp.**

*Per-angustus, fusco-æneus, violaceo-tinctus, nitidus, parcius setosus, antennis pedibusque testaceis, femoribus posterioribus medio infuscatis.*

*Long. viæ 4 mm.; lat. 1½ mm.*

Antennæ short and rather slender, but with a rather broad short club, the 10th joint being strongly transverse, and the 11th rather stouter than the 10th, and hardly so long as broad. Head about as broad as the elytra, with a large triangular impression behind the labrum. Thorax sub-cylindric, but a little dilated in the middle, about as long as broad; it, as well as the head, is without punctures. Elytra very narrow, but with the shoulders well marked; they are marked by broad obsolete grooves, without punctures. Legs very long.

Sent from Tairua by Captain Broun.

I have made a new generic name for these two species: they have the eyes entire, very prominent, finely granulated, the antennæ with short club, the terminal joint of the labial palpi very large, that of the maxillary palpi small. Tarsi moderately long and broad, very distinctly 5-jointed, the 2nd joint inserted very near the apex of the tibia; hind coxæ rather widely distant. The two species differ from *Paupris aptera* by their finely granulated eyes, by the presence of wings, and the more normal form of the elytra.

**PARMIUS DEBILIS, n. sp.**

*Angustulus, nitidus, parcissime pubescens, testaceus, elytris sutura late, prothorace capiteque vage, fusco-signatis; elytris suturam versus indiscrete punctatis; abdomine et pectoris lateribus fuscis.*

*Long. 5 mm.; lat. 1½ mm.*

Antennæ short and rather slender, 3rd joint a little longer than 4th, 9—11 slender but broader than the preceding joints, 9 and 10 each about as long as broad, 11th rather longer than 10th, a little longer than broad. Head, including the very prominent eyes, rather broader than the thorax, of a yellowish or tawny colour, obsoletely punctured. Thorax about as long as broad, considerably narrower than the elytra, constricted in front and behind, with some indistinct dark marks along the middle, its sculpture indistinct, consisting of indistinct depressions. Elytra narrow and parallel, with the shoulders well marked and rectangular; they are shining and of a yellow colour, with a broad irregular dark mark extending down the suture; they bear a very few fine upright hairs, and have indistinct large punctures near the suture. Legs entirely yellow.

A single individual, which was found I believe at Christchurch, has been given me by Mr. Wakefield.

(To be continued).

DIAGNOSES OF FOUR SPECIES OF *DORYPHORA* FROM COLUMBIA.

BY JOSEPH S. BALY, F.L.S.

*DORYPHORA HAROLDI*.

*Ovata, postice paulo attenuata, valde convexa, nigra, nitida; elytris sub-seriatim punctatis, flavis; singulatim suturâ angustâ, fasciâ latâ erodâ utrinque abbreviatâ, ante medium positâ, vittisque quatuor pone medium, exteriori geminatâ, 1—2 et 3—4 ad basin, 2—3 ante apicem conjunctis, nigris.* Long. 8 lin.

*DORYPHORA PULCHELLA*.

*Oblongo-ovata, cæruleo-nigra, nitida; thorace tenuissime, ad latera magis distincte, punctato; elytris metallico-cyaneis, minus fortiter punctato-striatis; interspatiis planis, 3<sup>tie</sup> et 9<sup>no</sup> paulo latioribus, apice conjunctis, flavis, limbo basali inter vittas flavo.* Long. 5½ lin.

*DORYPHORA BIVITTATICOLLIS*.

*Oblongo-ovata, valde convexa, fulva, nitida, antennis (basi exceptâ), thoracisque vittis duabus, basi et apice abbreviatis, nigris; thorace irregulariter punctato, ad latera varioloso; elytris confuse punctatis.* Long. 8½ lin.

*DORYPHORA INGENUA*.

*Ovata, convexa, rufo-picea, nitida, antennis (basi exceptâ) nigris; thorace sat fortiter punctato, maculis quatuor, transversim positis, nigris; basi utrinque piceo-tinctâ; elytris sat fortiter punctato-striatis, striis gemellatis, ad latera confusis; piceo-æneis, singulatim punctis duobus basalibus, vittâ submarginali, alterâ subsuturali, basi abbreviatâ (vittis apice conjunctis), fasciâque prope medium positâ, ad vittam exteriorem adfixâ, intus abbreviatâ, flavis.* Long. 5 lin.

Warwick: April, 1877.

ON STRIDULATION IN SOME *LEPIDOPTERA*—*HETEROCERA*.

BY A. H. SWINTON.

It is not very generally known, I believe, that a musical moth, belonging to the *Sesiidæ*, is found in North America. The following account is given by Dr. George Gibb, in the "Canadian Naturalist and Geologist" (vol. iv, p. 121).—"I have heard a stridulous sound emitted by many species of the *Sphinx* or hawk-moth tribe, captured generally in the evening twilight. This sound is something like the squeaking of a mouse or bat, and was strikingly produced in a beautiful and rare species of the humble-bee hawk-moth, the *Sesia Pelasgus*. This squeaking noise continued as long as the creature remained alive, and was much louder than in any other of the numerous Sphinges it was my good fortune to capture." And in another place he says: "I retained one I captured myself for some time alive, to hear its murmurs."

The formation of the palpi in our indigenous *Sesia fuciformis*, and the faint sound produced when they are rubbed on the haustellum, would lead one to think a musical organ must be looked for in the *Sesiidæ*, placed as in *Acherontia*.

In the *Bombycina*, next in review, the rule appears general that the capability for stridulation is greater in the male sex, the organs by which it is produced having in it the greatest development. Many species possess a high degree of susceptibility, and pertinaciously sham death in the net, while the pervading brightness of their colour seems to negative the law pertaining to the *Orthoptera-Saltatoria*, where, as a rule, a dulness of hue indicates an increase in the capacity for music in a species. The organism by means of which these moths produce, or probably produce, a stridor, consists in a *little triangular bladder*, external, denuded of hair and scales, or virtually so, formed simply, it would appear, by a vesicular dilatation of the integument of the episternum of the metathorax, over the surface of which runs a *lenticular crumpling representing a lima*, placed vertically, and lying invariably in the depression on its tense membranous superficies, that receives the *inwardly bowed hind femur* (which, in its position of repose, is adducted to the thorax), the inner superficies of which, often in part semi-denuded, is so directed as to suggest its function of effecting a stridor. The complete apparatus invites comparison with the inflated abdomen of the male *Orthoptera* of the genus *Pneumora*, and its semi-circular row of rectangular tubercles placed on either side of the third segment, that give rise to a stridulous sound or friction, when incited by the oscillatory movement of the hind femora. Or it may be paralleled with the spherical tymbals on the upper surface of the first dorsal arc of the abdomen of the male *Cicadæ*, traversed by raised chitinous striæ, which effect the drumming notes (if I may draw inference from analogy, certain considerations of adjustment and organization, method of singing, &c.), *by scraping over a salient portion of the chitinous integument posterior and adjacent*, worked by an internal muscle described by Réaumur, aided by a vertical and lateral movement of the agitated abdomen. (Compare on this subject papers by Solier and Goureaux, Ann. de la Soc. Ent. de France, 1837-38).

The vesicular bladder, often conspicuous in the *Heterocera*, was discovered by Solier in *Chelonia pudica*, and advanced as adequate explanation of the sound this insect was heard to produce on the wing (Ann. de la Soc. Ent. de France, t. vi). It was noticed to bear striæ on its anterior margin both by Solier and Laboulbène, about sixteen to twenty in the male, and eight to ten in the female, some six of which are more elevated than the remainder. The latter author,

who ascribes the sound to the friction of the hind femora over the strizæ, also mentions the vesicle as present and well developed in *Chelonia matronula* and *Ertzeni*, the former of which was observed by Czerny to produce stridulous sounds, and in *C. flavia* he found the episternum of the metathorax, though denuded, not dilated. The bladder and strizæ are perceptible in the indigenous *Phragmatobia fuliginosa*. Guenée (Ann. de la Soc. Ent. de France, ser. 4, t. iv, 1864, Ent. Mo. Mag., i, 228), again describes this identical vesicular inflation, noticed previously by Haldeman in the same Annales (1859), in several species of *Setina*—*aurita*, *ramosa*, *roscida*, *irrorea*, *flavicans*, and *Andereggi*, some of which he describes as producing ticking sounds, although the four or five raised strizæ, or rather membranous folds, somewhat distant, placed at the lower angle of the bladder, where it is covered by the hind femur, seem indeed to have escaped his notice. He naturally attributes the sound to the rumpling of the membrane. This latter author, and after him Laboulbène, made dissections of the vesicle in *Setina* and *Chelonia* respectively, and conjointly describe it as empty and divided into a right and left cavity by a membranous partition.

But this crumpled bladder only needs searching for to establish its presence very generally among the species of the *Lithosiidæ* and *Cheloniidæ*, the greatest development inclining towards the former, and attaining a maximum perhaps at the tangential point of the two groups. Though minute, it is beautifully developed in *Miltochrista miniata*, the linear corrugation lying under the hind femur, placed well on the bladder, as in *Setina*, and showing about twenty-five crenations. In the genus *Lithosia*, the metathoracic episternum is less vesicular, but the furrows defined and regular. In *Gnophria rubricollis*, the bladder is well seen, but the strizæ nearer the anterior margin are rather wider apart. It is also present in *Nudaria*. In *Callimorpha jacobææ*, the strizæ are present in both sexes, but the episternum is scarcely inflated. It would be curious to observe the pairing of these indigenous moths, and on capturing to place them to the ear, to ascertain if at any such time a stridulous motion or perceptible sound could be detected, and ascribed to the stimulus of love, rivalry, or fear. Other *Lepidoptera* have been noticed by Prof. Westwood as possessed of musical organs similar in construction, but situated, as I understand, on the abdomen, and corresponding to the tymbals of the *Cicadæ*. Of this, the genus *Glaucoptis*, in the family *Zygænidæ*, and the genus *Hecastesia*, afford examples, *Hecastesia Thyridon* being known to produce a sound (see the genus

*Ageronia* in Doubleday's "Genera of Diurnal Lepidoptera"). There is reference in Hagen's "Bibliotheca" to a stridulating *Noctua* of the genus *Orthosia*, and the authority given is Haldeman (Silliman's Journal, ser. 2, vol. v, p. 435); but the name "*Orthosia*" is a misprint for "*Lithosia*." Haldeman says that "*Lithosia miniata*, or an allied species, produces an audible stridulation by vibrating the pleura beneath the wings, this part being marked in recent specimens by parallel lines, apparently indicating the positions of the muscles."

Stridulation in the genus *Halias* appears also characteristic of the male ("Scottish Naturalist," i, pp. 213—215). "On the evening of 28th May, when mothing in the oak-wood surrounding my house," says Dr. F. Buchanan White, "I noticed what I thought was a beetle, flying round a small oak, and giving vent all the time to a sharp, quick sound, very similar to that produced by the Longicorn beetle *Astinomus* when held between the fingers. Though I failed to catch this individual, I was more successful with another which was behaving in the same manner. When in the net the sound ceased, and I saw to my astonishment that the insect was a moth. It then occurred to me that *Hylophila prasinana* was said to produce a sound."

"The following morning I tried some experiments with my captive, moving his wings and making him fly, but was not able to elicit any sound from him. I conclude, therefore, that the noise is not produced by the mere mechanical action of the wings, but is dependent on the will of the animal. I then killed the creature, which was a male, and dissected him. On removing the patagia and hairs from the thorax, several small projecting horny plates, both frontal and lateral, were apparent, but I could not discover that the wings produced any sound in connection with them."

"I then directed my attention to the structures between the thorax and hind-body, and from them I believe the sound proceeds. On examining the under-side of the animal, a large semi-lunar opening, immediately behind the metasternum, will be perceived. On dissection, this opening will be found to communicate with a large membranous plate, not flat, but folded at its posterior and inferior edge, and elevated and depressed in other parts, and somewhat semi-lunar in outline. To this plate numerous strong muscles are attached, and by action of these muscles on the plate I think the insect produces the noise in question. This sound-producing structure (if such indeed be its function) is analogous to the 'drum' of the male *Cicada*, and occupies a similar position. The same evening I again

went out to the wood and captured another specimen of the *Hylophila* in the act of 'squeaking.' The sound was quite distinct at a distance of ten feet or more. Next morning I treated him (it was a male) in the same manner as I had the first specimen, and with a similar result. I found that a good imitation of the sound may be made by rubbing the point of a knitting-needle on the closed blade of a clasp-knife"

Dr. Buchanan White has here directed attention to the membrane lining the strongly-marked ventral abdominal thoracic cavity in *Halias prasinana* as a probable medium of sound; for my part, I abandoned the position, since the membrane in the living insect did not seem sufficiently tense, but rather flaccid, besides being apparently destitute of any lima, and also because I since find that the elbows on the inner margin of the fore-wing in *H. quercana* and *prasinana* produce a stridulous sound by catching on either lateral piece of the scutellum of the metathorax, to which they lock, as in the *Noctuina*, by a callosity. And I ascribe this sound to a *lima-form striation* at the inner side of the anterior edge of the piece, which is distinct in *quercana*.

Lastly, among the *Lepidoptera*, as in the *Coleoptera*, there are certain tiny species that afford indications of stridulation, although they produce little or no sound that can reach the tympanum of the human ear. Thus I once noticed an exasperated little *Tortrix* among a group of *Dicrorhampha sequana*, toying round a buttercup in a rank grass plot at Cowes, suddenly place a fore-wing on edge and rapidly rub it over the costa of the hind-wing; and I have since found transverse furrows in this portion of the hind-wing membrane that might by courtesy be termed a lima.

Guildford: February 12th, 1877.

---

## DESCRIPTION OF A NEW *HARMA* FROM WEST AFRICA.

BY W. C. HEWITSON, F.L.S.

### *HARMA* *HECATÆA*.

*Upper-side*: female, dark brown, paler on the basal half of both wings. Both wings crossed beyond the middle by two bands of white, and a sub-marginal band of pale brown lunular spots bordered below by a line of black. Anterior-wing with the first band divided into spots near the costal margin: the second band composed of six separate spots, commencing near the apex in a small spot; the spots becoming large and pyramidal towards the anal angle. Posterior-wing with the first band broad, divided by black nervures, and marked by four black spots: two near the costal margin, one between the first and second median nervules, and the other near the anal angle; the second band of six pyramidal spots, and a lunular spot at the anal angle.

*Under-side*: pearly-white, clouded with lilac; the base of both wings pale rufous-brown, both crossed near the outer margin by a zic-zac dark brown band, and a sub-marginal band of paler brown. Anterior-wing with some pale brown lines in the cell, and a lunular black spot between the first and second median nervules, and a large quadrate spot of the same colour between it and the inner margin. Posterior-wing crossed before the middle by a rufous-brown band: clouded with brown near the costal margin; marked by three black spots centred with white, with above them two spots of white, and below them three pyramidal white spots: a black spot between the first and second median nervules centred with white, with a white spot above it; a black spot near the anal angle, its centre white, its border above rufous.

Exp.  $2\frac{1}{10}$  inch.

Hab. Ashanti.

This beautiful species is from the collection of Mr. Chapman, of Glasgow. It is not nearly allied to any other, but is most like *H. Anitorgis*.

Oatlands, Weybridge:  
April, 1877.

#### DESCRIPTION OF *EUPITHECIA ALBIPUNCTATA*, VAR. *ANGELICATA*.

BY C. G. BARRETT.

A very curious variety of *Eupithecia albipunctata*, Haw., has been submitted to me by Mr. W. Prest, of York, and at his desire I sent it to Prof. Zeller for examination. It appears that Mr. Prest had the good fortune to rear five specimens of this form last May, among a large number of the typical *albipunctata*. Prof. Zeller says of it: "It is a melanitic monstrosity which deserves a proper name with a description." At Mr. Prest's request, I therefore propose for it the name of *Eupithecia albipunctata*, var. *angelicata*.

Fore-wings smoky-black, with all the nervures and the discal spot distinctly blacker, but entirely devoid of the usual faint transverse lines and dots and sub-terminal line of white spots. Cilia smoky and without the usual pale blotches. Hind-wings also smoky, but paler at the base, nervures black. Head, thorax, and body entirely smoky-black.

If captured at large, this form would have been exceedingly difficult of identification; but it has the peculiarly broad fore-wings, dilated at the anal angle, which characterize *albipunctata* and its allies, and thus differs from the more narrow-winged *trisignata*, to which the smoothness of its coloring and the absence of dappled or dotted markings gives it a superficial resemblance. Its larva feeds, as in the type-form, on *Angelica sylvestris*.

Pembroke: April, 1877.

*Collections of British Lepidoptera.*—In one of the fables, ascribed with more or less probability to Æsop, is the well-known story of the town and country mouse; after describing the peaceful poverty in which the country mouse lived, it tells of a visit which he paid to his town friend, how astonished he was at the display of wealth and luxury, and of the delicacies, to procure which all the shops of the city had been ransacked; but he soon found these things did not bring happiness or content, and returned to his rocks and woods, preferring to eat his frugal meals in peace rather than share the daintiest feast where fear and care were in waiting.

It was with some such feeling that I lately returned from a visit to London, during which I was most kindly allowed to inspect various private collections of *Lepidoptera*, and I was surprised to find that many insects which I have been accustomed to consider British, more by tradition or chance immigration than as truly native, existed in considerable numbers in the metropolitan collections; amongst which I will mention, *Pieris Daphidice*, *Argynnis Lathonia* and *Niobe*, *Sesia sphegiformis* and *vespiformis*, *Deilephila nerii* and *euphorbia*, *Notodonta bicolor*, *Gluphisia crenata*, *Ophiodes lunaris* and *Acontia albicollis*.

I will not deny feeling a vague sense of disappointment that, although I had been a fairly diligent insect-hunter for upwards of thirty years, none of them had ever fallen to my lot: but when I saw that to many of these rarities written histories were attached, that it was deemed needful as it were to apologize for their possession, and that in very, very few cases could the owner say, "I caught the insect myself," my appetite, like the mouse's, failed for such delicacies, for it was evident, as he said, that the shops had been ransacked to provide them, and that care and doubt were part of the purchase. Besides examining the condition of the specimen, enquiry seemed to be needful into the moral character of the seller and each previous holder of the insect, making the formation of a British collection an occupation more suited to a police officer than a naturalist.

I suppose 20/- would be considered cheap for a British specimen of any of the above named insects, and some would probably cost £5, not because they are really rare but simply because the British Islands are near the north-western limit of their distribution. On the same principle a specimen of *Catocala nupta* worth 3d. in Middlesex ought to be worth 20/- if captured in Yorkshire where it rarely if ever occurs; and when the passage, involuntary or otherwise, from Calais to Dover adds 19/11 to the value of *Argynnis Lathonia* and £5 to that of *Deilephila nerii*, and there is no difference of form whatever between a British and a foreign example, the temptation to fraud is obviously very great, and the willingness of British collectors to allow themselves to be thus imposed on has made them the laughing stocks of the students of every other branch of science.

Whatever may formerly have been the case it is now impossible to make a purely British collection of *Lepidoptera*, unless the collector restricts himself to specimens of his own capture. It is a well-known fact that foreign specimens of British species are yearly set in English fashion, imported into this country in large numbers, and sold as British; these are gradually, as collections are dispersed, and all trace of their origin is lost, filtered into every cabinet in the country, and worse, a spirit of distrust is growing up amongst us, injurious to the mind and destructive of that friendship in which the common love and admiration of God's works ought to unite us.



How often have I heard remarks like this, "Yes, it is a fine collection, but what do you think about that row of *Lathonia*?" or "That's the 20th *bicolora* I know of, but I never heard of Bouchard catching more than 4 or 5," and so the character of honorable men is talked away and suspicion and distrust engendered.

Hear an old writer, "Through their beauty and variety of colour and exquisite forme, they do bring to a liberal and gentle minde the remembrance of honestie, comeliness, and all kinds of virtues; for it would be unseemly for him that doth look upon and handle faire and beautiful things, and who frequenteth and is conversant in faire and beautiful places, to have his minde not faire alsoe."

I remember when Newman reviewed the list of entomologists published in the Annual for 1860, that he made merry over a certain eminent philosopher whose name adorns the list, and who was said to "study, but to have no collection." Perhaps it might have been wiser to have imitated than to laugh, to have followed his steps, however humbly, rather than pursue the *ignis fatuus* of a British collection as so many of us have done. I think it very doubtful if the great majority of the collections of *Lepidoptera* made in England during the last thirty years have done any service to science or their owners. In point of fact, where are they? The once valued treasures of more than half the collectors enumerated in the Annual, have long gone to the moles and bats.

I believe there is but one remedy for the evil state of things which exists amongst us, viz., the open admission into our collections of properly labelled continental specimens of our rarer species: this would not only open a field of knowledge to which the great majority of English Lepidopterists are total strangers, and tend to make them something more than mere collectors, but would also enable them, if desired, to obtain British examples at much lower rates than at present, for there would be little or no inducement to mis-state the facts as to the origin of a specimen. The proposed change would also, I hope, tend to mitigate the merciless war now waged against our very limited Lepidopterous fauna, and give new comers a chance of establishing themselves.

Unwillingness to enter upon an almost boundless field has, I believe, deterred many from making an attempt to obtain some knowledge of European insects, but I speak from experience when I say that the difficulties are not serious. I do not advise the making of general collections, but the selection of limited departments, such for instance as the butterflies of Europe; there are 450 species of these, and I have obtained about 400 of them without any expense beyond postage, continental collectors being most willing to send them in return for many common British insects. Foreign entomologists complain of the difficulty they find in getting British specimens, owing to our insular prejudices, and I have little doubt our collectors will be able to turn their now almost worthless duplicates to much better account than they can at present, if they take my advice.

It is not even necessary to understand French or German, though should any of our collectors be induced to study those languages, they will find another and rich reward.—EDWIN BIRCHALL, Woodside, Douglas, Isle of Man: March 28th, 1877.

*On the occurrence of Heliothis scutosa in Norfolk.*—A very interesting addition was made to the list of British *Lepidoptera* in the summer of 1875, and has been passed over almost unnoticed—that of *Heliothis scutosa*, of which one specimen was obtained by Mr. Thornthwaite from Norfolk that year, and a second in the summer of 1876.

As far as I can ascertain, these are the first genuine British specimens observed, since it appears that the supposed Carlisle specimens were only *dipsacea*. The second specimen taken has been sent to me by the kindness of Mr. Thornthwaite, and is in very fair condition. It is really a very different species to *dipsacea*, the ground colour of both fore and hind-wings being *white*, and all the markings *grey*, except a black streak at the origin of the subterminal line on the costa. There is no trace whatever of the olive-ochreous colour of *dipsacea*, and the fore-wings have all three stigmata very large and distinct, resembling in some degree those of *Agrotis corticea* and the base, costal margin, hind margin and a band preceding it, are all clouded with grey. The hind-wings have a large grey central *isolated* lunule, beyond which is a narrow angulated band, followed by the usual broad band with light blotches, at the hind margin.

It seems that Mr. Thornthwaite has been in the habit of collecting by means of more than ordinarily powerful lights, and thereby has attracted species which, either from their rarity or wariness, are seldom obtained. After trying this mode of collecting in Norfolk when visiting, he left the lamps with friends, who have captured and sent on to him (unset) the insects which they have been able to secure. Among them were these *scutosa*, some *Heliothis armigera*, most of which seem to have damaged themselves by unnecessary activity, and many other species.—CHAS. G. BARRETT, Pembroke: 13th April, 1877.

*Re-occurrence of Myelois ceratoniæ in England.*—I am glad to record that *Myelois ceratoniæ* has been again taken in this country. Mr. Stainton mentions in his "Manual" the capture of but one specimen. For the last three years, however, specimens have been taken by myself, and by one or two friends, in a warehouse in London. I hear, through the kindness of Mr. C. G. Barrett, that Professor Zeller states he has bred it from pods of *Ceratonia siliqua*, but I have reason to believe that the specimens I have taken were from almonds imported from Tarragona and the Island of Iviza.—A. B. FARN, The Dartons, Dartford: 2nd April, 1877.

*On a form of Depressaria costosa, Haw.*—In June, 1875, I collected in the Botanical Gardens at Cambridge a number of larvæ in spun-up shoots of *Genista tinctoria*, from which I was much surprised to breed a series of apparently unusually dark *Depr. costosa*. These larvæ were tolerably bright green, with dorsal and sub-dorsal stripes distinctly brownish-red; and I therefore concluded that Stainton's brief description of the larva as "grey" was founded upon an illusion. However, in June, 1876, I found in the New Forest a grey larva, indistinctly striped with darker, equally common on furze, broom, and *Genista anglica*. Having concluded that the larva of *costosa* was green and red, I wondered much what these might be: and expected nothing less than the series of ordinary *costosa* which I bred from them.

I have carefully compared these two series, but can only discover the following points of difference: (1) in the first series (from *Genista tinctoria*) the fore-wings are very markedly more suffused with brown than in the second, but the individuals differ a good deal, and the lightest of the first present no difference from the darkest of the second: (2) the hind-wings in the first series are distinctly darker: (3) all the specimens but one of the first series have a tolerably broad black ring towards apex of terminal joint of palpi: those of the second have in no case more than a

fuscous line round the palpi in its place, and are often quite unspotted. However, one specimen of the first series has only the fuscous circular line, so that no absolute line of distinction can be drawn.

It will be seen that these points of distinction are very slight, and might perhaps, by the aid of longer series, be shown to be quite untrustworthy: yet the difference of larva appears to be strongly marked and constant. If I might express an opinion, it would be that the darker specimens afford an example of what Dr. Staudinger denominates a "Darwinian species;" but my object is simply to call attention to the subject, in the hopes that others will investigate it during the coming season.—E. MEYRICK, Ramsbury, Hungerford: 3rd April, 1877.

[This occurrence of a peculiar form of so well defined a species as *D. costosa* on *Genista tinctoria* is extremely interesting. Fischer von Röslerstamm (p. 64) when writing of *D. atomella* in 1834 (before it was differentiated into a broom-feeder and a *Genista tinctoria*-feeder), mentions that von Tischler had obtained several specimens of a peculiar variety from larvæ which, when quite young, were taken from *Spartium scoparium*, and were then fed up to their full size with *Genista tinctoria*. Would it be possible to try similar experiments with larvæ of *D. costosa*, for instance, by feeding up grey larvæ from *Ulex* with *Genista tinctoria*, or by feeding up green larvæ from *Genista tinctoria* with *Ulex*?—H. T. S.]

*On mounting Typhlocybidæ, &c.*—A simple method of mounting *Typhlocybidæ*, &c., so as to combine the advantages of ordinary carding with facility for examining the under-side of the body and the neuration of elytra and wings, is as follows:—The body of the insect (which is to be taken off the setting-card dry, as mentioned at p. 237 *ante*) should be fixed by means of a very small drop of Canada balsam, previously warmed, upon a piece of thin glass, of a size a trifle longer than would be requisite for a card, so as to leave rather more space behind the insect. The posterior margin of the glass is to be placed in a slit extending in a horizontal direction about half-way through a piece of ordinary cabinet cork about a quarter-of-an-inch square; a pin can then be passed through the cork in the position usual with carded insects, and the whole preparation is fit for the cabinet; the natural elasticity of a sound piece of cork being sufficient to retain the glass in position through all the vicissitudes to which a carded insect is usually liable, but of course it can be fastened with elastic glue if desired.—JAMES EDWARDS, Bracondale, Norwich: 14th March, 1877.

*New British species of Psyllidæ.*—*Psylla betula*, L.—I have discovered this species amongst several others taken by Mr. Douglas, in August last, at Dunkeld on birch trees. It appears to have a position near *Ps. pineti*. The insect which Mr. Douglas exhibited at the Meeting of the Entomological Society, of 5th July last, with a doubt as to its being the true representative of the above, was *Ps. sylvicola*, Leth. Förster does not appear to have known it, but he describes a species under the name of *Ps. ambigua* which agrees pretty well with it.

*Aphalara artemisia*, Först.—On page 67 *ante*, I gave a brief description of this insect, believing that it would be found to occur here, and I have now the gratification to establish its right to be considered a British species, as I have detected it amongst a number of *Psyllidæ* kindly sent by Mr. C. W. Dale for determination. It appears to have been taken so long ago as 27th July, 1843, by his father, and I

think that by a careful examination of *Artemisia maritima* (on which plant probably it was found) between June and September, it is almost certain to be discovered.—JOHN SCOTT, 1, St. Mildred's Terrace, Bromley Road, Lee, S.E.: April, 1877.

*Note on Trioza juniperi, Meyer-Dür.*—This insect, to which I called attention on page 68 *ante*, proves to be *T. proxima*, Flor. The certainty of this is based on types received by me from Dr. Flor himself, as well as the corroboration of Dr. Franz Löw. Dr. Flor took the species on *Pinus abies* at the end of August and beginning of September, and I am now in stronger hope than ever of its being found in Britain.—ID.

*Lacometopus clavicornis, L., and its relation to Teucrium chamædrys.*—The following note, supplementary to Mr. Douglas' on this subject (p. 236 *ante*) may be useful. *Teucrium chamædrys* is not a native plant, but is naturalised on old walls in Britain and in sandy fields in Ireland. In Britain it chiefly occurs in the south, as the following abstract of Mr. Watson's remarks on its distribution (*Compendium Cybele Britannica*) will show:—Cornwall; Devon; Somerset; Hants; Sussex; West Thames; Norfolk; West Ouse; South and North Severn; South-East, South-West, and North Wales; Yorkshire; Tyne; Perth; Forfar; and I have seen it in Aberdeen.—F. BUCHANAN WHITE, Perth: April, 1877.

*The Entomological Collections of the Dublin Society.*—As I see a notice in the *Entomologist's Monthly Magazine* for April, that a portion of the late Mr. E. Brown's British collections were secured for the Royal Dublin Society, the present seems a good opportunity for calling the attention of my own countrymen who are interested in entomology (scarcely a dozen of whom have visited Ireland during the past ten years) to what is to be seen in Dublin in the way of insects. It must not be supposed that this is a merely local museum; it has long been supported by Government, and is at present about to be placed wholly under Government management, and new and extensive museum buildings are projected, although the present museum consists (exclusive of corridor, staircase, &c.) of two magnificent rooms 200 feet long, with a double gallery in the upper one.

The entomological collection is in a separate room, and is at present contained in twenty large cabinets, as follows:—British *Coleoptera* 1, *Diptera* and *Hymenoptera* 1, *Macro-Lepidoptera* 1, other Orders 1. Foreign *Coleoptera* 3, *Lepidoptera* 10, *Orthoptera* 1, *Hemiptera* and *Homoptera* 1, other Orders 1. Several Orders have outgrown the space allotted to them, and additional cabinets are about to be added for their accommodation. The British insects purchased at Mr. Brown's sale consist chiefly of *Hymenoptera*, *Neuroptera*, *Orthoptera* and *Hemiptera*. The most remarkable of the foreign insects in the Society's collection are perhaps the *Hemiptera* (consisting mainly of the late Mr. Curtis's collection), and the *Lepidoptera Heterocera*, which were lately enriched by the purchase of Mr. Sharpe's fine collection of *Sphingidæ*. Fine series of insects of various Orders from Sierra Leone, Jamaica, Japan, and other interesting localities, have also been acquired from time to time, thereby adding large numbers of rare and new species to the collection.

I ought, perhaps, to mention that the late Mr. A. H. Haliday's collection did not come to us, but forms part of the Museum of Trinity College, Dublin.—W. F. KIRBY, Museum, Royal Dublin Society, Kildare Street, Dublin: 2nd April, 1877.

ENTOMOLOGICAL SOCIETY OF LONDON: 4th April, 1877.—PROFESSOR WESTWOOD, President, in the Chair.

Messrs. C. A. Briggs, J. T. Carrington, and G. Harding were elected Members; and Messrs. E. H. Birchall, Dr. E. Capron, T. D. Gibbon-Carmichael, and V. Cluse were elected Subscribers.

The Secretary exhibited a collection of fine species of *Lepidoptera* from near Bangkok, in Siam, forwarded to him by Mr. R. Garner, F.L.S., of Stoke-upon-Trent.

Mr. McLachlan exhibited a specimen of *Ophideres materna*, a brightly-coloured exotic species of *Noctuidæ*, given to him by Mr. R. H. Scott, of the Meteorological Office, with a note to the effect that it was taken at sea, in Lat. 25° 24' S., Long. 62° 10' E. (the nearest land being the island of Mauritius, about 360 miles distant), by Capt. Raeburn, of the ship "Airlie." The moth is a common Indian species, but is found also in Africa. A specimen was long ago recorded from Brazil, and Mr. Grote had recently noticed its occurrence in Florida. He also exhibited the cocoon and pupa of a species of *Cetoniidæ* (probably *Diplognathus silaceus*) from Camaroons, sent to Mr. Rutherford. The cocoon appeared to be formed of dark brown earth, but attached thickly to the exterior were oval, slightly flattened, deep black hard bodies (each nearly 5 lines long, by 2 broad), which he thought were probably the dung of some rodent animal.

Mr. Champion exhibited *Stenus Kiesenwetteri* (hitherto only found in this country at Wimbledon), *Gymnusa brevicollis*, *Bembidium nigricorne*, and *Plociomerus luridus*, all taken by him at Chobham, and *Philonthus cicatricosus* from Shoreham.

Mr. H. Vaughan exhibited (on behalf of Mr. Bidwell) an example of *Notodonta trilophus*, taken about the year 1867 by a lamplighter, at Ipswich. Mr. Douglas bred the species many years ago from a larva found near St. Osyth, and there had been other records of its capture in this country, but more or less of vague authenticity.

Professor Westwood read a letter addressed to him by Mr. B. G. Cole respecting the subject of seasonal dimorphism in *Lepidoptera*, and giving the results of an experiment he had made with *Ephyra punctaria*. The greater number of moths, the produce of one brood of eggs, appeared in July, and were of the spotted variety, but the remainder did not emerge till the May following, and resembled their mother in all respects. Mr. Cole alluded to Dr. Knaggs' remarks *à propos* of *Selenia illustraria*, published in Ent. Mo. Mag., vol. iii, p. 238, as bearing upon the same subject. He considered it probable that individuals that remained the longest time in the pupa stage would produce the most highly vitalized imagoes. Mr. McLachlan alluded incidentally to the *Lepidoptera* brought home by the Arctic Expedition from the far north (82° N. latitude), and said that the larvæ of most of these species must of necessity require more than one season to acquire their full growth, for the short fitful summer was utterly inadequate for the full development of most of the species; and, furthermore, it was probable that the pupa state might habitually last several years.

Professor Westwood read notes on the species of *Stylopida*, which had the habit (exceptional for the Family) of living upon a species of *Homoptera*, found at Sarawak; and exhibited drawings illustrating the paper. He also read notes on the genus *Prosopistoma*, especially with regard to the species from Madagascar described by Latreille, and of which he possessed the types, which were exhibited.

Mr. Cameron communicated a paper on East Indian species of *Tenthredinidæ*. Mr. A. G. Butler communicated the first portion of an enumeration of the *Lepidoptera* of the Amazons, collected by Dr. Trail in the years 1873—1875. Mr. Baly communicated descriptions of new species of *Halticidæ*. Mr. C. O. Waterhouse read a Monograph of the Australian species of *Lycidæ*. Mr. Smith read descriptions of new species of the genera *Pseudomyrma* and *Tetraponera*.













